

The combined assessment of the effect characterization and the sensitivity of ecological receptors have been used to determine whether or not an effect is significant with respect to the EIA Regulations. These two criteria have been cross-tabulated to assess the overall significance of the effect in **Table 6.3**. Effects with significance of moderate or major are considered to be significant in terms of the EIA Regulations.

Table 6.3 - Matrix used to assess the significance of potential effects upon ecological receptors.

Magnitude of effect	Sensitivity of receptor	High (International and National)	Medium (Regional and District)	Low (Parish/ (Local))	Negligible (Very Local/Low)
High		Major	Major	Moderate	Negligible
Medium		Major	Moderate	Moderate	Negligible
Low		Moderate	Moderate	Minor	Negligible
Negligible		Negligible	Negligible	Negligible	Negligible

6.3 Site Description

The proposed wind farm site at Spicer Hill is on land at Ordnance Survey Grid Reference SE 203 050. It is situated approximately 4km to the north-west of Penistone, Yorkshire. The land use for the majority of the site is as an operational wind farm on grazing land for sheep. There is a flooded quarry on site with limited groundcover or woodland present. Three turbines are proposed in grazing fields. Access is proposed from the existing entrance located on Whitley Road to the south of the site.

6.4 Ecological Baseline

6.4.1 Site Background and Context

An initial desk based search was carried out by GLM Ecology. Designated sites and associated protected species and habitats at a local and regional level have been identified through that process. A description of the local area in relation to designated sites with ecological interests and the findings of an initial desk based review of the area are presented in the context of the following sections. The following resources were used:

- NBN Gateway¹
- RSPB sensitivity maps²;
- Natural England³ and
- Multi Agency Geographic Information for The Countryside⁵.

A meeting was held with BMBC Biodiversity Officer Trevor Mayne who advised on the guidance and methods to be adopted.

6.4.2 Designated Sites

Guidelines are present to ensure that the proposal does not have a significant impact on the qualifying interests of both International and National Designated Sites within accepted distances from the Survey Area. These distances vary according to what protected species are present in the relevant Designated Sites and differ according to the level of protection accorded to a particular species i.e. whether the species is protected at an International, National or Local level.

The following relevant ecological designated sites were recorded within 10km of the Survey Area.

Table 6.4 – Designated Sites

Ecological feature	Zone of impact from site boundary	Sites
Internationally designated sites (SPA, SAC, Ramsar)	Within 10km	South Pennine Moors SPA- designated for moorland bird aggregation (golden plover merlin, and short eared owl.
Nationally designated sites	Within 5km	Dark Peak SSSI Spring Meadows SSSI Little Don Stream SSSI Pyeflatts Meadows
Locally designated sites	Within 2km	Whitley Edge Broadstone Reservoir Ingbirchworth Reservoir

Figure 6.1 in Volume III shows Statutory and Non-Statutory Conservation Sites within 2.5km of Spicer Hill.

6.4.3 Scope of Ecological Assessments

The scope of the present EcIA was derived from the initial site background and context studies above, the experience of the ecologists and guidance from NE and Trevor Mayne. The EcIA considers the following issues:

- Birds;
- Bats;
- Otter;

- Badger;
- Water Vole; and
- Phase 1 Habitat Survey.

Data records were obtained from the following local organizations:

- Barnsley Biological Records Centre (BBRC)
- South Yorkshire Badger Group
- South Yorkshire Bat Group

Barnsley Bird Study Group was contacted, but at the time of writing no response had been received.

6.4.4 Data Records of Protected/Notable Species

A full list of species recorded within 2.5km of Spicer Hill, provided by Barnsley Biological Records, is provided electronically in **Appendix 6A**.

6.4.5 Birds

A comprehensive list was supplied by BBRC (see **Appendix 6A**) including all local common passerines. The vast majority of records were collected at Ingbirchworth, Royd Moor and Broadstone Reservoirs. No species were recorded specifically at Spicer Hill.

6.4.6 Mammals

Brown hare, wood mouse, bank vole, mole, rabbit, field vole, otter, badger, hedgehog, badger, grey squirrel, stoat, weasel and water vole all recorded with 2.5km of site. No species were recorded at Spicer Hill.

6.4.7 Bats

Bat species recorded (provided by South Yorkshire Bat Group in **Appendix 6B**) in a 5km radius of Spicer Hill were as expected for the area. Species include common pipistrelle, soprano pipistrelle, brown long eared bat, noctule and Daubentons bat. The nearest records to the site were at Penistone and Royd Moor Farm (BBRC).

6.4.8 Habitats and Plants

An average list of plants recorded. Detailed Phase 1 reports for Whitley Edge, Broadstone and Ingbirchworth Reservoirs are supplied in **Appendix 6A**.

6.4.1 Amphibians and Reptiles

Common frog, common toad and great crested newt have been recorded with 2.5km of site, but none specifically at Spicer Hill. The great crested newt records were at Royd Moor Reservoir.

6.5 Ornithology

Generally ornithological surveys on and around the site are required to assess potential impacts of birds throughout the year, which could arise due to:

- Potential loss, fragmentation and degradation of bird habitats arising from the construction of turbine bases, crane pads, access tracks, a sub-station and temporary construction compounds and power lines;
- Potential displacement of hunting or migrating birds through avoidance of turbines, work staff and machinery;
- Disturbance to birds due to noise from operating turbines;
- Potential disturbance to nesting birds (for example, displacement of birds from breeding habitats) resulting from the construction activities; and
- Potential for birds to collide with turbine blades and power lines

6.5.1 Survey Scope and Methodology

As the site is an operating wind farm well distant from any sites designated for ornithological species, and data searching reveal no Schedule 1 species to be present in the area, it was considered that breeding bird surveys would be appropriate.

6.5.2 Breeding Bird Survey

An area of 500m around the proposed turbine site was surveyed (SNH 2006). Other ground was surveyed by listening along the boundary. The survey work was based on the standard BTO Common Bird Census (CBC) technique. Birds of Conservation Concern (Eaton et al. 2009)⁵ were identified. The designations used were: Breeds (B), and Possible Breeder (PB).

6.6 Survey Results

6.6.1 Breeding Birds

Ten species of bird were recorded as breeding, and five as possibly breeding, within the survey area (**Table 6.5**). This does not include all common passerines breeding in plantations or around habitation e.g. coal tit, pied wagtail, house sparrow etc. Most of the recorded birds are recorded locally as common residents or summer visitors whose populations are not threatened and are in favourable conservation status in England. No raptors were recorded as breeding on site. Nationally three species are on the red list and five species are on the amber list of Birds of Conservation Concern. Both oystercatchers and lapwings are breeding around the operating wind turbines.

Table 6.5 - Breeding bird species list for Spicer Hill: April – June 2014.

Species	Latin	Totals	Status
Lapwing	<i>Vanellus vanellus</i>	4-6 pairs	B
Oystercatcher	<i>Haem. ostralegus</i>	2-3 pairs	B
Great Spotted Woodpecker	<i>Dend. major</i>	1 seen	PB
Blackbird	<i>Turdus merulas</i>	Small numbers	B
Songthrush	<i>Turdus philomena</i>	1 pair	B
Robin	<i>Erith. rubecula</i>	Small numbers	B
Wood Pigeon	<i>Columba palumbus</i>	Present	B
Meadow Pipit	<i>Anthus pratensis</i>	Small numbers	PB
Skylark	<i>Alauda arvensis</i>	3-4 pairs	B
Wren	<i>Troglodytes troglodytes</i>	Small numbers	B
Chaffinch	<i>Fringella coelebs</i>	Small numbers	B
Linnet	<i>Carduelis cannabina</i>	2 pairs	PB
Sedge Warbler	<i>Acro. schoenob.</i>	1 singing	PB
Willow Warbler	<i>Phy. trochilus</i>	4 singing	B
Yellowhammer	<i>Emberiza citrinella</i>	2 seen	PB

6.6.2 Schedule 1 Species

No Schedule 1 species were recorded.

6.6.3 European Protected Species (EPS) and Mammal Surveys

Aims & Objectives

The aims of this assessment were:

- To assess whether any protected mammals or EPS were present on site;
- If any protected species are present to assess local population status and usage of the site;
- To recommend further survey work if required.

Survey Limitations

All mammal or EPS surveys provide only a snapshot of animal activity and are intended to inform a planning application only. Mammal activity is likely to vary over time and in differing conditions and, as such, a negative result does not prove a lack of all mammal activity, but does provide a strong indication of activity levels.

Desk Study

A desktop study was carried out via NBN Gateway, South Yorkshire Badger Group and Barnsley Biological Records Centre to identify the presence of any protected mammals or EPS present within the 5km grid square encompassing the survey site.

Field Survey

The surveys consisted of walkovers of the site and along a 50m corridor along the access track following standardized guidance to visually inspect and assess the site for its potential to support protected mammals and EPS. As a result of the habitat surveys and data search this survey concentrated on badger, otter and water vole, however signs for any protected mammals or EPS were searched for.

6.6.4 Badgers

Badger Legislation

Both badgers and their setts are protected by law. As a result it is an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so;
- To intentionally or recklessly interfere with a sett;
- To disturb a badger when it is occupying a sett;
- Damage or destroy a sett; or
- To obstruct access to, or any entrance of a badger sett.

A badger sett is defined in the legislation as *'any structure or place, which displays signs indicating current use by a badger'*. 'Current use' does not simply mean 'current occupation' and for licensing purposes it is defined as *'any sett within an occupied badger territory regardless of when it may have last been used'*. A sett therefore, in an occupied territory, is classified as in current use even if it is only used seasonally or occasionally by badgers, and is afforded the same protection in law

Survey Methodology

The surveys consisted of a walkover of the site and ground within 250m of its boundary to visually inspect and assess the site for its potential to support badgers. Badgers surveys were carried out according to recommended guidelines^{6, 7, 8 and 9}. Evidence of badger activity searched for included:

- Setts: badger setts typically have characteristic shapes and dimensions;
- Paw prints and badger hair caught on hedges and fences;
- Foraging signs: foraging badgers leave distinctive marks when foraging;
- Characteristic worn pathways; and
- Latrines: badgers defecate in pits, often clustering several pits into a latrine.

South Yorkshire Badger Group surveyed the area on 07/09/2014 and found possible evidence of badger using the site occasionally. A known sett (location confidential) offsite was found to be active.

Limited signs of badger were recorded. A sett is known to be in the general area offsite so it would be expected that badgers transverse the area occasionally.

6.6.5 Otters

Legislative Context

Otters and their resting places receive protection under The Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations 2004 (the Habitats Regulations) which make it an offence to:

- Intentionally kill, injure or take an otter;
- Possess or control any live or dead specimen or anything derived from an otter;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by an otter; or
- Intentionally or recklessly disturb an otter while it is occupying a structure or place, which it uses for that purpose.

Survey Methodology

The surveys consisted of a walkover of the site and ground within 250m of its boundary to visually inspect and assess the site for its potential to support otters. Otter surveys were carried out according to recommended guidelines^{10, 11, 12 and 13}. Evidence of otter activity searched for included:

- **Holts:** otter holts are often found in various situations. These include cavities in a riverbank, hollow trees, between roots, rocky clefts, rabbit burrows or tunnels in peat. The entrance may be underwater with an air vent into the chamber, which is lined with dry vegetation.
- **Couches:** otters often have resting spots or couches where they lay up. An otter may have many holts or resting sites within its home range
- **Paw prints** in muddy or silted areas along the burn edges.

- **Spraints** or otter faeces. Often found on boulders, under bridges, elevated positions, fallen trees or on piles of grass
- Characteristic **worn pathways/slides** or haul out areas.

NBN Gateway and BBRC recorded otter within the 5km grid square of the site. No signs of otter were recorded.

6.6.6 Water Voles

Signs of water vole were surveyed for in accordance with the standard survey methodology¹⁴. Forms of evidence searched for included:

- Sightings of the species itself;
- Tracks/footprints found in soft substrate such as mud along the water-line;
- Droppings and latrines also found along the water-line;
- Burrows, which may be below water or on the bank top; or
- Grazed lawns, often associated with the burrows and feeding signs such as piles of cut vegetation

NBN Gateway and BBRC recorded water vole within the 5km grid square of the site. No signs of water vole were recorded.

6.6.7 Bats

Bat Legislation

In England and Wales, the relevant legislation is the Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); and by the Conservation of Habitats and Species Regulations (2010).

Aims & Objectives

To determine what bat species are present on the site and whether the habitat is utilized for roosting, foraging or commuting by bats.

Data Review

A data search was carried out using records from NBN Gateway, BBRC and South Yorkshire Bat Group to determine if any bat species had been recorded in the 5km square of which Spicer Hill is enclosed.

Survey Methodology

A habitat and bat assessment survey was carried out at the site in May 2014 followed by bat detector surveys in May – September in accordance with guidance from the Bat Conservation Trust¹⁵ and Natural England¹⁶. The objectives of the bat surveys were to identify whether the site would be considered suitable for roosting bats and whether bats were present on site. The aim was to provide sufficient evidence so that the potential impacts of the proposed development on any local bat populations could be assessed and if appropriate, mitigation suggested.

Habitat Survey

The site was surveyed for potential flight lines/commuting routes, roosts and foraging areas and the habitat assessed for its overall suitability for bats. Any potential foraging areas were examined and linear features were assessed for their suitability as flight lines or commuting pathways. This survey was to evaluate the site and not a specific survey in to identify roosts etc.

Bat Detector Surveys

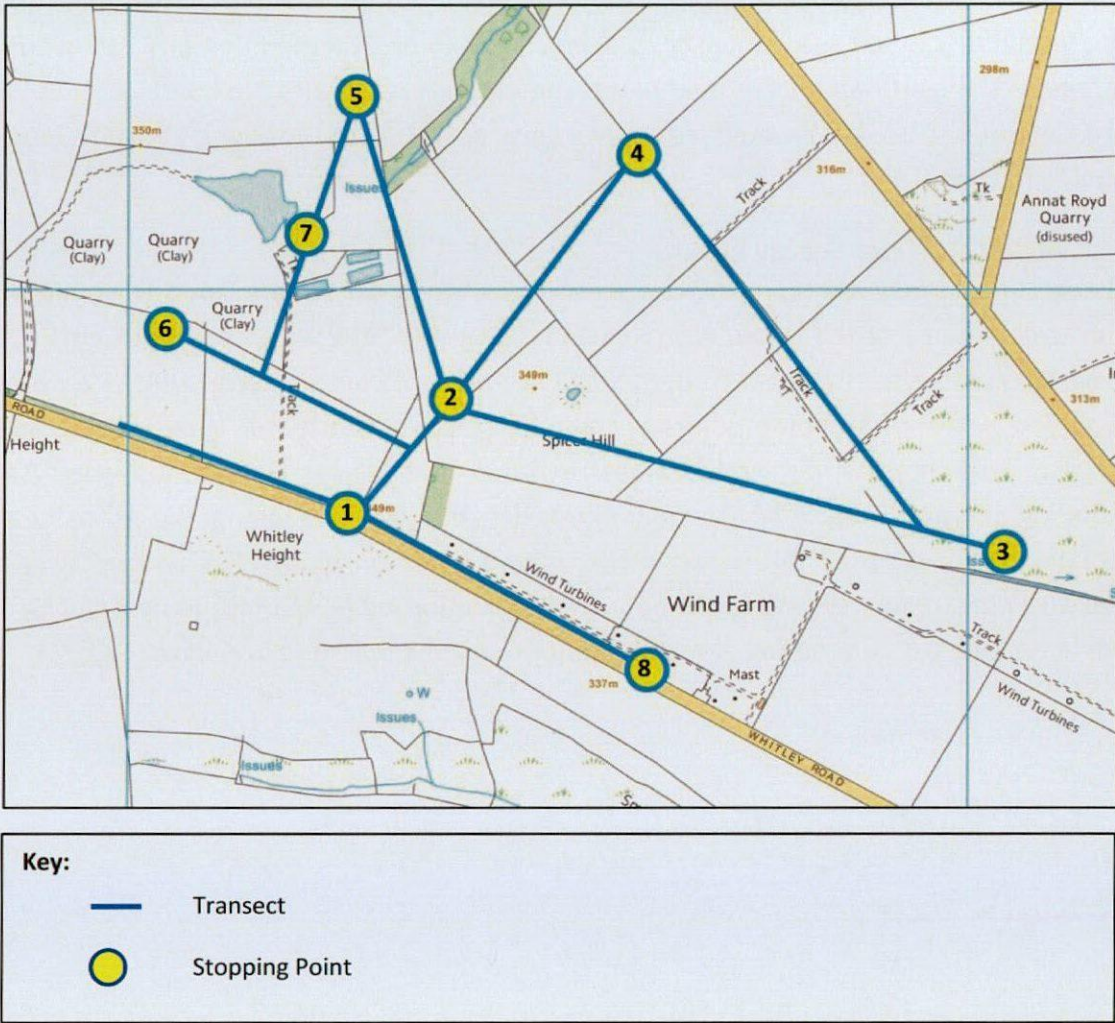
Three visits were made with details of times and weather conditions shown in **Table 6.6**. The dusk surveys were carried out from approximately 30 minutes before sunset to 2 hours after sunset. The dawn survey was from approximately 2 hours before sunrise to 30 minutes after sunrise (**Table 6.6**) The site was divided into a circular transect (as shown in **Figure 6.1**) which were surveyed constantly by two individual surveyors starting at opposite ends of the transect on each visit.

In May, June and August two SM2 static recorders were positioned near approximate turbine locations for 5 nights each month.

Table 6.6 - Survey times and weather conditions.

Survey	Date	Sun Set	Sun Rise	Time	Weather
Dusk	20/05/14	21.10		20.35-23.20	W2.3/8.13C
Dusk	24/06/14	21.40		21.00-23.50	NE2.6/8.12C
Dawn	20/08/14		05.55	03.15-06.20	W3.0/8. 7C
Dusk	10/09/14	19.35		18.50-21.30	E2. 4/8 12.C

Figure 6.1 – Bat survey transects and stopping points



Data Search

NBN Gateway, BBRC and South Yorkshire Bat Group recorded common & soprano pipistrelle, noctule, Daubentons and brown long-eared bat within 5km of the site.

Buildings

No buildings are on site within 400m of the proposed turbines.

Trees

Very few trees on site have the potential for bat roosts.

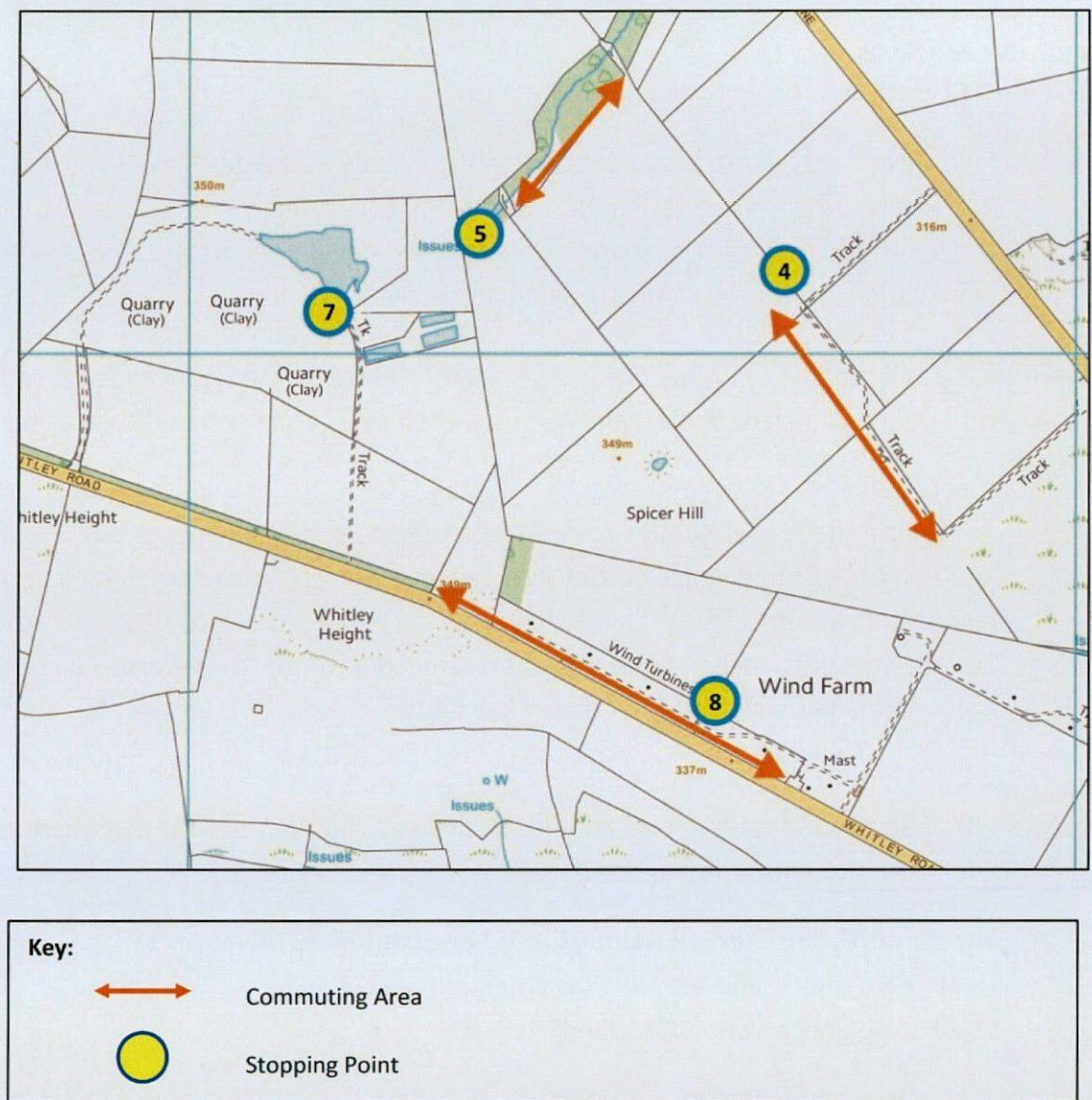
Foraging Areas

The site near the proposed turbine locations consists of grazing and arable fields and this would be classed as low quality foraging. It would be expected that any bats would forage to the south and north near woodland and the reservoirs. No roost potential is present on site so bats would not travel past good quality foraging to reach poor quality habitat.

Walked Bat Detector Survey Results

The results reveal a very poor usage of the site by bats. One species, common pipistrelle was recorded in low numbers and a single noctule was recorded. **Figure 6.2** illustrates where bats were recorded. Small numbers of common pipistrelle (<2) were recorded between stopping points 8 commuting along the minor road in May and August. Two common pipistrelles were recorded briefly near the flooded quarry at stopping point 7. A single common pipistrelle was foraging along the track near stopping point 4 on all three visits. One or two common pipistrelles and possibly a soprano pipistrelle were recorded near the vegetation edge near stopping point 5. A single noctule bat commuting along the minor road was recorded in August.

Figure 6.2 – Bat detector results



Static Recorder

The SM2 at stopping point 6 recorded 3 bat passes of common pipistrelle over 10 nights recording. The SM2 at stopping point 7 recorded 24 bat passes of common pipistrelle over the same period. The SM2 at stopping point 3 recorded 28 passes of common pipistrelle and a single record of noctule bat. All of the records were brief indicating bats were not foraging in the area but were commuting.

6.6.8 Phase 1 Habitat Surveys

Aims & Objectives

The Phase 1 Habitat Survey of Spicer Hill aimed to:

- Identify and record broad habitats within the vicinity of the development area;
- Provide a description of habitat distributions and highlight any areas of ecological constraints in relation to the proposed development; and
- Contribute towards informing planning processes.

Whilst not a full botanical survey, the Phase I method enables a suitably experienced ecologist to obtain sufficient understanding of the ecology of a site so that it is possible either:

- To confirm the conservation significance of the site and assess the potential for impacts on habitats /species likely to represent a material consideration in planning terms; or
- To ascertain that further surveys of some aspect(s) of the site's ecology will be required before such confirmation can be made.

Legislation

Legislation exists to protect habitats and floral species from destruction, degradation and loss as a result of development activities and include:

- The Conservation (Natural Habitats, & C.) Regulations 1994;
- Wildlife & Countryside Act 1981 (as amended); and
- The Nature Conservation (Scotland) Act 2004.

Desktop Survey

BBRC supplied three maps that show the Phase 1 Habitats within 2.5km of Spicer Hill.

These are:

- Areas of Interest from the National Habitat Inventories pt1;
- Areas of Interest from the National Habitat Inventories pt2; and
- Known Distribution of LBAP Habitats.

The above are presented as **Figures 6.2, 6.3 and 6.4** within **Volume III**.

Field Survey Methodology

Phase I habitat survey is a standardised method of recording habitat types and characteristic vegetation, as set out in the Handbook for Phase I Habitat Survey – a technique for Environmental Audit¹⁷. The Phase I habitat survey undertaken in June

2012 covered the whole of the site and proposed turbine area and encompassed a buffer envelope around this area where possible.

Field Survey Results

The habitats present within the proposed turbine and track survey area are presented in **Figure 6.5** in **Volume III**, and discussed below.

Grazing and Arable Fields

There is a high coverage of grazing fields with improved grass (**B4**) habitats on site. The grassland fields are dominated by agriculturally improved grasses, such as, perennial ryegrass (*Lolium perenne*), including clover (*Trifolium repens*), creeping buttercup, (*Ranunculus repens*), common daisy (*Bellis perennis*), milk thistle (*Silybum marianum*), thistle (*Cirsium vulgare*), nettle (*Urtica dioica*) and sheeps sorrell (*Rumex acetosella*). A few of the fields also have patches of *Juncus effusus* in wetter areas (**B5**), mainly to the east of the site. There are a number of arable fields on site.

Marshy Grassland

There are areas of marshy grassland (**B5**) with *Juncus effusus* abundant within the occasional field in the east of the site and also within an area of open woodland close to a burn.

Broadleaved Semi-Natural woodland

Small areas of semi-natural broadleaved woodland (**A1.1.1**) can be found on site close to existing turbine locations, the stream (and an open area of trees), adjacent to farm and residential buildings at Spicer House to the north. These trees consist of ash (*Fraxinus excelsior*) with hawthorn (*Crataegus monygra*), rowan (*Sorbus aucuparia*) and beech (*Fagus sylvatica*).

Broadleaved Trees

There are broadleaved trees (**A3.1**) centrally on site that have an open aspect as they are not very dense. These trees are situated close to the stream. Individual trees also line some of the field boundaries on site. Trees consist mainly of ash (*Fraxinus excelsior*) with hawthorn (*Crataegus monygra*), rowan (*Sorbus aucuparia*) and beech (*Fagus sylvatica*).

Semi Natural Mixed Woodland

There is an area of mixed (conifer and broadleaved trees) woodland (**A1.3.1**) to the south of the site adjacent to the road and as a boundary to grazing fields. This tree area consists of birch (*Betula pubescens*), hawthorn (*Crataegus monygra*), rowan (*Sorbus aucuparia*), ash (*Fraxinus excelsior*), sycamore (*Acer psuedoplatanus*) and beech (*Fagus sylvatica*) with occasional conifer.

Quarry

A disused quarry (**I1.2.1**) is situated approximately centrally on site and contains a large pond and rough grazing grass around it.

Standing water

There are a few ponds on site, east of the quarry. The ponds (**G1**) have some marginal vegetation consisting of *Phalaris arundinacea* and *Typha latifolia* which is less than a meter wide. Within the quarry there is a large eutrophic body of standing water (**G1.1**), which varies greatly in depth and width depending upon the rainfall.

Running Water

There is a small stream on site (**G2**), which comes from the north-east heading to the south-west. In some areas of the stream, where there is an open area of trees, the ground is wet there is an abundance of *Juncus effusus* (**B5**).

Residential buildings and other

The residential buildings (**J3.6**) of Spicer House are located to the north of the site and are surrounded by amenity lawn (**J1.2**), open grass fields with broadleaved trees.

Boundaries and tracks

The boundaries on site comprise of a mixture of wood and wire fencing (**J2.4**) to enable stock proofing on the existing stone walls (**J2.5**) some of which have not been maintained. There are various tracks from the road onto the site, into farmland, to the quarry and also to the existing turbines.

Existing Turbines

The thirteen 53m Royd Moor wind turbines exist to the south of the site, which are to be removed in the future. The three larger Spicer Hill turbines are to remain on site.

6.7 Assessment of Impacts

6.7.1 Impacts on Breeding Birds

The species of breeding birds recorded on and around the site would be considered as typical for the habitat and of low sensitivity. In the grazing fields where the turbines are proposed very few breeding birds were recorded apart from skylark, oystercatcher and 4-6 pairs of lapwing. No raptors or Schedule 1 raptors breed on site. The magnitude of impact is considered to be negligible and overall the significance of impact to be no more than negligible.

Mitigation

No mitigation is deemed to be required if construction of access tracks or turbine bases occur outside the bird breeding season. If this is not possible then a pre-construction breeding bird survey will be required.

6.7.2 Impacts on Water Vole

No signs of water vole were recorded.

Mitigation

No mitigation is deemed to be required.

6.7.3 Impacts on Badger

Signs of badger were recorded, however no active setts were found.

Mitigation

As badgers are known to be in the general area and often wander widely and expand their territories the following mitigation is proposed:

- All contractors should be made aware of badgers and their legal protection;
- All personnel are made aware that badgers may exist close to the site and are at risk from vehicles; On site speed restrictions will be put into place for all vehicles, including construction, maintenance and visitors to the site;
- All trenches dug during construction and exposed open pipes will be covered at the end of each working day to ensure no risk to badgers, otters or any other wildlife that may have the potential to be trapped; and
- Ramps will be located within the trenches or pits that can't be covered to allow an exit for any mammal that has gone into a trench or pit.

6.7.4 Impacts on Otters

No signs of otter were recorded.

Mitigation

As above for badger

6.7.5 Impacts on Bats

Small numbers of common pipistrelle and a single noctule bat were recorded. The SM2s recorded very small numbers of common pipistrelles bats commuting across open areas of the site. No roosts are present on site. No trees or buildings are to be removed for construction and therefore no significant impact on bats is expected from the turbines. The proposed location of the wind turbines has been assessed against Natural England guidance regarding wind turbines and bats (Natural England, 2012).

Mitigation

As each of the turbines is placed more than 50m from tip to hedgerows or tree lines in accordance with Natural England design guidance, no further mitigation is deemed to be required.

6.7.6 Impacts on Habitats

The vegetation throughout the survey area is a mixture of grazing and arable grassland surrounding a quarry. This habitat is extremely common and considered to have low ecological value.

No significant impacts on the aquatic environment are anticipated from the proposed development infrastructure. There is the potential of a slight increase in run-off in to ditch systems through the ground disturbance of the construction phase but this is expected to be short lived, minor and will be further reduced through mitigation. Standard best practice mitigation measures are recommended to ensure likelihood of impact events upon freshwater ecology receptors at the site result in non-significant negative residual effects.

Standard Mitigation for Terrestrial and Aquatic Habitats

The following standard mitigation measures are proposed:

- Good construction site management will be implemented to minimise generation of litter, dust, noise and vibration. This will be controlled and monitored through the Construction Environmental Management Plan. Through adhering to best practices during construction and operation phases, fragmentation, disturbance and pollution to habitats present can be minimised; and
- During construction, management of excavated soil will focus on preventing silt runoff into the water environment during rainfall periods through careful design and maintenance of drainage/silt traps.

6.7.7 Impacts on Designated Sites.

It is considered that the integrity of qualifying species and habitats for designated sites (SPA, SAC, SSSI and Local Designations) within the specified distances as recommended by NE would not be impacted upon, particularly as wind turbines already operate in close vicinity to the proposed extension.

6.8 Summary of Impacts

This assessment sought to identify all species and habitats on or near the site that are protected under European and national legislation or which appear on national or local biodiversity action plans.

Survey work was completed across the site and the immediate surrounding area, following best practice and industry guidance to identify the species and habitats present. A comprehensive desktop study was also carried out.

The site is an existing operating wind farm. The vegetation types of grazing and arable land are extremely common and of low ecological value. No trees or hedgerows are to be removed.

It is considered highly unlikely that the development will have any long-term impact on the integrity of the area’s ornithological features or the conservation status of the species found here.

Badger is known to be the general area and limited signs of badger traversing the area were noted. No badger setts were recorded on site.

A small numbers of bats were recorded on site and NE/BCT mitigation is recommended.

There are no notable uncertainties or limitations with the data collection. The survey timings were all optimal.

It is considered that the integrity of qualifying species and habitats for designated sites (SPA, SAC, SSSI and Local Designations) within the specified distances as recommended by NE would not be impacted upon.

Following the criteria set out in **Tables 6.1, 6.2 and 6.3** the following table is an assessment of the impacts on flora and fauna at Spicer Hill due to the proposed construction of Spicer Hill Wind Farm Extension.

Table 6.7 – Summary of Predicted Impacts

Residual Effects	Value of receptor	Magnitude of change	Duration	Nature	Significance
Loss of foraging or breeding habitat to badgers.	Parish (Local)	Negligible	Short term	Negative	Not significant
Loss of foraging or breeding habitat to otter.	Parish (Local)	Negligible	Short term	Negative	Not significant
Loss of foraging or breeding habitat to water vole.	Parish (Local)	Negligible	Short term	Negative	Not significant
Loss of foraging or roosting habitat to bats	Parish (Local)	Negligible	Short term	Negative	Not significant
Bat mortality due to turbine collisions	Parish (Local)	Negligible	Short term	Negative	Not significant
Bird mortality due to turbine collisions	Parish (Local)	Negligible	Short term	Negative	Not significant
Loss of habitat to breeding birds	Parish (Local)	Negligible	Short term	Negative	Not significant
Loss of habitat to wintering birds	Parish (Local)	Negligible	Short term	Negative	Not significant
Loss of habitat/vegetation	Parish (Local)	Negligible	Short term	Negative	Not significant
South Pennines SPA	International	Negligible	Short term	Negative	Not significant
Local SSSIs	National	Negligible	Short term	Negative	Not significant
Whitley Edge	Local	Negligible	Short term	Negative	Not significant
Broadstone Reservoir	Local	Negligible	Short term	Negative	Not significant
Ingbirchworth Reservoir	Local	Negligible	Short term	Negative	Not significant
Royd Moor Reservoir	Local	Negligible	Short term	Negative	Not significant

6.9 Conclusion

It is proposed to construct three wind turbines and associated infrastructure on grazing land situated at Spicer Hill, Barnsley. A range of ecological assessments has been undertaken to investigate the ornithological and other ecological interest of the site and it is concluded that potential for this to be adversely affected by the current proposal is extremely unlikely.

6.10 References

1. National Biodiversity Gateway Database: <http://data.nbn.org.uk/>
2. J. A. Bright et.al. 2006. Bird Sensitivity Map to provide locational guidance for onshore wind farms in Scotland. RSPB Research Report No 20.
http://www.rspb.org.uk/Images/sensitivitymapreport_tcm9-157990.pdf
3. <http://www.naturalengland.org.uk><http://>
4. Multi Agency Geographic Information for The Countryside:
<http://www.magic.gov.uk/website/magic/>
5. Eaton, M.A. et al. 2009. Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 102:296-341.
6. Harris, S.; Cresswell, P. & Jefferies, D. 1989. Surveying for badgers. Occasional Publication of the Mammal Society No. 9. Mammal Society, Bristol.
7. <http://www.badger.org.uk/Content/Home.asp>
8. Cresswell, P., Harris, S. and Jefferies, D.J. (1990). The History, Distribution, Status and Habitat Requirements of the Badger in Britain. Nature Conservancy Council, Peterborough.
9. Macdonald, D.W., Mace, G. & Rushton, S. 1998. Proposals for future monitoring of British mammals. Department of the Environment, Transport and the Regions, and Joint Nature Conservation Committee, London.
10. National Rivers Authority 1993. *Otters and river habitat management*. Conservation Technical Handbook 3 (subsequently reissued by the Environment Agency)
11. JNCC 2004. Common Standards Monitoring Guidance for Mammals. ISSN 1743-8160.
12. Chanin P. (2003) Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No.10 English Nature, Peterborough
13. Liles G. (2003) Otter Breeding Sites. Conservation and Management. Conserving Natura 2000 Rivers Conservation Technical Series No.5 English Nature, Peterborough.
14. Strachan, R. 2011. Water Vole Conservation Handbook EA/EN/WildCRU, Oxford. (3rd edition)
15. Bat Conservation Trust (2007). Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London.
16. Natural England Technical Information Note TIN051. (2009) Bats and onshore wind turbines: Interim Guidance.
17. Joint Nature Conservation Council (1988) Handbook for Phase 1 Habitat Survey.

7 LANDSCAPE AND VISUAL IMPACT

7.1 Introduction

This section reports on the potential landscape and visual effects of the proposed Spicer Hill Wind Farm Extension. A Landscape and Visual Impact Assessment (LVIA), which includes a Cumulative LVIA, has been undertaken for this project in accordance with the relevant EIA Regulations. The proposed development would be located on farmland 2km to the north-west of Millhouse Green in Barnsley, and would comprise three turbines of 93m to blade tip. The proposed development comprises a three turbine extension to the existing Spicer Hill scheme (itself three turbines of 93m) and would also sit adjacent to the three 100m turbines at Blackstone Edge.

The aim of the design and assessment process is to promote the best “environmental fit” for the development through the consideration of the existing landscape resource, the potential landscape and visual effects and the design alternatives.

The assessment process refers to landscape value, and in particular landscape designations and related planning policy, as well as landscape character and the capacity for wind farm development at this site. Included as part of this chapter are accompanying figures, illustrating potential visibility and, photomontaged examples from a range of receptors, descriptions of which can be found in **Volume II: Landscape and Visual Impact Assessment**.

7.2 Guidance

The Landscape and Visual Impact Assessment (LVIA) and the cumulative landscape and visual assessment (CLVIA) have been undertaken in accordance with the methodology set out below and conforms with *The Guidelines for Landscape and Visual Impact Assessment*, Third Edition (Landscape Institute and IEMA, 2013). Additional guidance has been taken from the following publications:

- *Making Space for Renewable Energy: Assessing On-shore Wind Energy Development*, Natural England, 2010;
- *NCA Profile 37. Yorkshire Southern Pennine Fringe*, Natural England, 2013;
- *NCA Profile 51. Dark Peak*, Natural England, 2012;
- *NCA Profile 38. Nottingham, Derbyshire and Yorkshire Coalfield*, Natural England, 2013;
- *Landscape Character Assessment: Guidance for England and Scotland* (Countryside Agency and Scottish Natural Heritage publication, produced by the University of Sheffield and Landuse Consultants), 2002;

- *Photography and Photomontage in Landscape and Visual Assessment*, Landscape Institute Advice Note 01/2011, 2011;
- *Visual Representation of Windfarms Good Practice Guidance*, prepared by Horner + Maclennan and Envision for Scottish Natural Heritage, The Scottish Renewables Forum and the Scottish Society of Directors of Planning, February 2007;
- *Siting and Designing Windfarms in the Landscape*, Scottish Natural Heritage, Version 1, December 2009;

7.3 Assessment Methodology

7.3.1 Defining the Study Area

An overall Study Area of 15km radius from the site centre has been used in this assessment following consultation and agreement with Barnsley Metropolitan Borough Council. The study area was further defined for each part of the assessment process as follows:

Landscape and Visual Impact Assessment (LVIA) – the study area was restricted to the application site, access routes, and the potential Zone of Theoretical Visibility (ZTV) from where there may be a view of the development at up to 30km distance from the site centre. The assessment study area with respect of landscape and visual receptors would be the area within 15km which would be that most likely to experience significant effects as a result of the proposed development. This opinion has been informed with reference to the findings of field survey and viewpoint analysis, as well as professional experience from previous assessments.

Cumulative Landscape and Visual Impact Assessment (CLVIA) - considered existing wind energy development proposals that have permission, and those that are currently the subject of undetermined applications within 15km radius of the site centre. An initial assessment of the cumulative visibility of these wind farms within the Cumulative Search Area was then undertaken in order to determine which wind farms have the potential to contribute to a significant cumulative effect following addition of the Spicer Hill Wind Farm Extension proposal.

These wind farms are considered to be those within a 15km radius Study Area as mapped at **Figure 7.6a**; and

A *Zone of Theoretical Visibility (ZTV)* was calculated using the RESoft © Windfarm computer software to show areas of potential visibility of any part of the proposed wind turbines, calculated to blade tip and hub-height. The ZTV however, does not take

account of built development and vegetation, which can significantly reduce the area and extent of actual visibility in the field and as such provides the limits of the visual assessment study area.

Figure 7.1 illustrates the ZTV for blade tip height of 93m at 1:125,000 scale, **Figure 7.2** illustrates the ZTV to a hub height of 57m at this scale.

7.3.2 Baseline Landscape and Visual Resource

This part of the LVIA refers to the existing landscape character, quality or condition and value of the landscape and landscape elements on the site and within the surrounding area, as well as general trends in landscape change across the study area. A brief description of the existing landscape character and land use of the area which includes reference to settlements, transport routes, vegetation cover, as well as landscape planning designations, local landmarks, and tourist destinations.

7.3.3 Assessing Landscape Effects

Landscape Effects are defined by the Landscape Institute as *“changes to landscape elements, characteristics, character, and qualities of the landscape as a result of development”*. The potential landscape effects, occurring during the construction and operation period, may therefore include, but are not restricted to, the following:

- Changes to landscape elements: the addition of new elements or the removal of trees, vegetation, and buildings and other characteristic elements of the landscape character type;
- Changes to landscape quality: degradation or erosion of landscape elements and patterns, particularly those that form characteristic elements of landscape character types;
- Changes to landscape character: landscape character may be affected through the incremental effect on characteristic elements, landscape patterns and qualities and the cumulative addition of new features, the magnitude of which is sufficient to alter the overall landscape character type of a particular area; and
- Cumulative landscape effects: where more than one wind farm may lead to a potential landscape effect.

The development may have a direct (physical) effect on the landscape as well as an indirect effect (visual) effect from outside the landscape character area. Landscape effects are assessed by considering the sensitivity of the landscape against the degree of change posed by the development. The sensitivity of the landscape to a particular

development is based on factors such as its quality and value and is defined as high, medium or low. Examples of landscape sensitivity and criteria are described below:

High Sensitivity – This would primarily be rare landscapes, or landscapes which have been afforded either a national or local designation such as National Parks, or Areas of Outstanding Natural Beauty. These landscapes can be fairly dramatic in terms of scale and may feature a number of attractive landscape features, including mature woodland, intricate gorges and river valleys, prominent summits of features of cultural heritage. Man-made features or modifications to the landscape will be minimal and the landscape may have a wild or remote feeling to it;

Medium Sensitivity – This would include landscapes which are still relatively attractive and generally rural but do contain some man made elements. It may be landscapes which have been modified to accommodate farming practices and landscapes which include more prominent settlement pattern and road networks. These landscapes may also contain woodland including plantation forestry and shelterbelts; and

Low Sensitivity – This would only be reserved for landscapes which may be deemed unattractive due to heavy modification and prominent man made features, such as industrial units.

The magnitude, or degree, of change considers the scale and extent of the proposed development, which may include the loss or addition of particular features, and changes to landscape quality, and character. Magnitude can be defined as high, medium, low or negligible, examples of magnitude are shown below:

High Magnitude – This would be a major change to baseline conditions, where the character of the landscape may be altered from its existing state into a landscape with wind farms;

Medium Magnitude – This would be a noticeable change in the baseline condition but not necessarily one which would be enough to alter the character of the landscape and will generally diminish with distance;

Low Magnitude – This would be a minor change to the baseline conditions where the development would be readily missed by a casual viewer and any character of the landscape would remain intact; and

Negligible Magnitude – This would be a change which would be difficult to notice and the baseline conditions are likely to remain almost as they were.

The level of effect is determined by the combination of sensitivity and magnitude of change as shown in **Table 7.1**.

Table 7.1 - Magnitude and Sensitivity Matrix for assessing Overall Level of Effect

Sensitivity	Magnitude of Change			
	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate	Moderate/Minor
Medium	Major/Moderate	Moderate	Moderate/Minor	Minor
Low	Moderate	Moderate/Minor	Minor	Minor/Negligible
Key:		Significant in terms of the EIA Regulations		
		Not Significant		

7.3.4 Assessing Visual Effects

Visual effects are recognised by the Landscape Institute as a subset of landscape effects and are concerned wholly with the effect of the development on views, and the general visual amenity. The visual effects are identified for different receptors (people) who will experience the view at their places of residence, during recreational activities, at work, or when travelling through the area. These may include:

- Visual effect: a change to an existing view, views or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view; and
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect. Either:
 - Simultaneously - where a number of developments may be viewed from a single fixed viewpoint simultaneously within the viewer's field of view without moving;
 - Successively - where a number of developments may be viewed from a single viewpoint successively by turning around at a viewpoint, to view in other directions; and
 - Sequentially - where a number of developments may be viewed sequentially or repeatedly from a range of locations when travelling along a route.

The general principles adopted for the assessment of visual effects were taken from *The Guidelines for Landscape and Visual Impact Assessment* Third Edition, produced by the Landscape Institute, 2013. This guidance outlines the approach to define a 'sensitivity' for a given view and a 'magnitude of change' that would be caused by the development in question over its lifetime. A matrix in the Guidance is then used to assess the overall 'level of effect'. This matrix is the same format as used to understand landscape effects and can be seen in **Table 7.2**. Examples of visual sensitivity are highlighted below:

High Sensitivity – These include residential receptors, such as views from individual properties or views from within settlements. Views from both recreational locations, such as hill summits, long distance footpaths, cycle paths and tourist locations such as castles and visitor centres are also considered to be of high sensitivity;

Medium Sensitivity – This would include most other visual receptors such as views from roads, other areas of landscape which would not be classed as recreational areas and views from areas within settlements which would not be considered residential; and

Low Sensitivity – This would cover views experienced by people at work and views where the existing view is already dominated by significant man made features.

In the context of this project, the effects during operation are always direct and long term (reversible after 25 years). Effects may also be non-cumulative or cumulative. None of the visual effects relating to this project have been considered positive in order to present a worst case view of any effects, although it should be noted that surveys have consistently shown that the majority of people are positively disposed to wind farm development once it is built.

7.3.5 Viewpoint Analysis Method

Viewpoint analysis is used to assist the LVIA from selected viewpoints within the study area. The purpose of this is to assess both the level of visual impact for particular receptors and to help guide the assessment of the overall effect on visual amenity and landscape character. The assessment involves visiting the viewpoint location in good weather and viewing wireframes and photomontages prepared for each viewpoint location. Illustrated turbines always face the viewer to give a worst case impression of the development under consideration. 15 viewpoint locations were agreed with the Council and are those that were used in the original Spicer Hill Wind Farm application.

7.3.5.1 Methodology for Production of Visualisations

With the view selected, the locations were confirmed and then photographed with a digital Single Lens Reflex (SLR) camera set to produce photographs equivalent to that of a manual 35 mm SLR camera with a fixed 50 mm focal length lens. In accordance with the SNH guidance *Visual Representation of Windfarms Good Practice Guidance*, panoramic images were produced from these photographs to record a 76° angle of view illustrating the typical extent of view that would be experienced by the viewer at the viewpoint when facing in one direction and also provides an indication of the visual