2. ENVIRONMENTAL IMPACT ASSESSMENT

2.1 INTRODUCTION

Environmental Impact Assessment (EIA) is a process designed to ensure that decisions of whether permission should be granted for developments with potentially significant effects on the environment are made only after an appropriate assessment of the likely significant environmental effects has been carried out, with appropriate mitigation and/ or management measures identified. The decision must be made following consultation with statutory consultees, and this consultation should include other interested bodies and members of the public. This chapter of the Environmental Statement (ES) describes the EIA process for the proposed Spicer Hill Wind Farm (hereafter referred to as 'the Development').

2.2 LEGISLATIVE CONTEXT OF THE APPLICATION

The requirement of the European Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by the Council Directive 97/11/EC, are transposed with regard to the proposal in question by The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended)[1] ('the EIA Regulations').

Schedule 2 of the EIA Regulations lists *"Installations for the harnessing of wind power for energy production (wind farms)"* as developments for which an EIA must be undertaken where there are likely to be significant effects on the environment by virtue of factors such as its nature, size or location within a sensitive area.

Guidance on what constitutes a significant effect is provided in the DETR Circular 02/99 on Environmental Impact Assessment[2]. Annex A of the Circular states that the likelihood of significant effects from wind farms:

> *"will generally depend upon the scale of the development, and its visual impact, as well as potential noise impacts. EIA is more likely to be required for commercial developments of five or more turbines, or more than five MW of new generating capacity".*

The Development, with an estimated new generating capacity of 6.9 MW, is therefore defined as a Schedule 2 development. In view of the nature and size of the Development, the Developer considered that an EIA should be undertaken and therefore did not seek a formal Screening Opinion as to whether or not an EIA was required. A range of discussions, however, have taken place with the planning authority and a broad agreement reached that an EIA would be carried out.

The information the Developer is required to submit is presented within this ES. The scoping, preparation and production of this ES has been conducted in accordance with the latest Government regulations and advice on good practice, comprising:

- The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI 99/293) as amended;
- DETR Circular 02/99 Environmental Impact Assessment, 12th March 1999;
- Environmental Impact Assessment: Guide to Procedures, January 2003[3]; and
- Guidelines for Managing Environmental Impact Assessment (Institute of Environmental Management and Assessment).

[1] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. SI 99/293, as amended.
[2] Department of the Environment, Transport and the Regions (1999). *Circular 02/99 on Environmental Impact Assessment*. 12th March 1999
[3] DCLG (2000). *Environmental Impact Assessment: guide to procedures.* January 2000 http://www.communities.gov.uk

This guidance advises that, in examples of good practice, the EIA should be treated as an iterative process rather than a single, post design environmental appraisal. In this way the findings of the EIA can be used to inform the evolving design of the project, and hence achieve a 'best fit' within the local environment.

The design of the Development utilised this approach; where potentially significant effects have been identified, endeavours have been made to incorporate appropriate mitigation measures within the design. The actual design as submitted with the planning application by taking the landscape issues which were raised by the previous submission into consideration in this resubmission.

2.2.1 The Environmental Statement

The presentation of environmental information through an ES involves the compilation, evaluation and presentation of all the likely significant effects of a proposed development in relation to the technical assessments. In conjunction with post application consultation, this document aids the planning authority in considering and determining the planning application.

Schedule 4 Part II of the EIA Regulations requires that the following information is provided as a minimum:

- A description of the Development comprising information on the site, design and size of the development;
- A description of the measures envisaged to avoid, reduce and, if possible, remedy significant adverse effects;
- The data required to identify and assess the main effects which the Development is likely to have on the environment;
- An outline of the main alternatives considered and main reasons for why this choice was made, taking into account the environmental affects; and
- A non-technical summary of the above.

The White Paper on Energy (May 2007)[4] sets out a number of initiatives and proposals to reduce uncertainty in planning and shorten overall timescales from application to a final decision on consent of renewable energy developments.

2.3 EIA METHODOLOGY

2.3.1 Scoping

The aim of the Scoping process is to identify key environmental issues at an early stage, to determine which elements of the proposal are likely to cause significant environmental effects and to establish the work required for the preparation of the ES.

A scoping opinion for the Developer was requested from the relevant planning authority, Barnsley Metropolitan Borough Council (BMBC), by Arcus Renewable Energy Consulting Ltd ("Arcus"), on behalf of the Applicant, in August 2007. BMBC agreed a list of statutory and non-statutory consultees that Arcus would also consult, who in turn were requested to provide comment on the Scoping Report and any relevant information in their possession.

The 2007 Scoping Report referred to the original five turbine wind farm proposal. However the site location and the turbine sizes were very similar to those in this three turbine resubmission. Hence it is considered that any issues associated with this resubmission would have been identified through the original Scoping process and on-going consultation undertaken as part of the EIA.

A summary of all the consultation responses with both statutory and non-statutory consultees is shown in Table 2.1. The Table includes responses from the original Scoping exercise,

[4] BERR (2007). *Meeting the Energy Challenge - A White Paper on Energy.* The Stationary Office, Norwich.

responses to the previous, five turbine planning application submission and responses to consultation undertaken specifically for this three turbine resubmission.

Relevant consultation scoping responses were forwarded on to the specialist consultants to take into consideration during their assessments. In addition, further detailed consultation was undertaken by the specialist consultants with the relevant consultees to agree the assessment methodologies, survey areas and timings where applicable. These are detailed within the relevant technical Chapters of this ES.

Table 2.1 Consultation Responses

Consultee	Comments / Environmental Issues Raised															
	No Response/No Issues Raised/Keep Informed	Objection	Referral to other Consultee	Planning Policy	Socio-economics/ Tourism/ Land-use	Landscape & Visual	Ecology & Ornithology	Hydrology/Hydrogeology	Cultural Heritage	Noise & Air Quality	Existing Infrastructure	Shadow Flicker	Traffic & Transportation	Cumulative Issues	Construction Works	Operational Works
	Scoping Consultation Responses - Five Turbine Proposal															
Arqiva	✓		✓													
Barnsley Metropolitan Borough Council (BMBC)				✓		✓	✓			✓				✓		
BBC Research and Development[5]											✓					
BMBC Rights of Way Officer			✓		✓											
British Horse Society					✓											
British Telecommunication	✓															
Cable and Wireless Network Planning	✓															
Campaign to Protect Rural England						✓										
Civil Aviation Authority	✓															
English Heritage	✓			✓					✓							
Environment Agency							✓	✓								
Garden History Society						✓			✓							
Highways Agency										✓		✓	✓			

[5] No direct consultation, use of BBC wind farm tool

Consultee	Comments / Environmental Issues Raised															
	No Response/No Issues Raised/Keep Informed	Objection	Referral to other Consultee	Planning Policy	Socio-economics/ Tourism/ Land-use	Landscape & Visual	Ecology & Ornithology	Hydrology/Hydrogeology	Cultural Heritage	Noise & Air Quality	Existing Infrastructure	Shadow Flicker	Traffic & Transportation	Cumulative Issues	Construction Works	Operational Works
Hutchinson 3G	✓															
ITC Office of Communications (OFCOM)			✓								✓					
Joint Radio Company (JRC)		✓	✓								✓					
Kirklees Council	✓															
Ministry of Defence (Defence Estates)	✓															
National Air Traffic Service En Route Plc (NERL)[6]	✓															
National Grid Regional Gas Transmission											✓					
National Grid UK Transmission	✓															
National Grid Wireless	✓		✓													
National Trust			✓	✓	✓	✓			✓							
Natural England					✓		✓									
Northern Gas Networks											✓					
Orange PCS	✓															
Peak District National Park Authority			✓			✓	✓									
Penistone Town Council						✓				✓						
Ramblers	✓															
Robin Hood and Sheffield Airport	✓															
Royal Society of Protection of Birds (RSPB)	✓															

[6] NATS.

Consultee	Comments / Environmental Issues Raised															
	No Response/No Issues Raised/Keep Informed	Objection	Referral to other Consultee	Planning Policy	Socio-economics/ Tourism/ Land-use	Landscape & Visual	Ecology & Ornithology	Hydrology/Hydrogeology	Cultural Heritage	Noise & Air Quality	Existing Infrastructure	Shadow Flicker	Traffic & Transportation	Cumulative Issues	Construction Works	Operational Works
South Yorkshire Police	✓															
T-mobile	✓															
Vodafone	✓															
Yorkshire Water	✓															
	Responses at Planning Stage - Five Turbine Proposal															
Barnsley Metropolitan Borough Council (BMBC)						✓								✓		
BMBC – Transportation													✓			
BHS					✓											
CAA	✓															
CSS	✓															
English Heritage	✓															
Environment Agency	✓						✓	✓								
JRC	✓															
Kirklees Council	✓					✓										
Ministry of Defence (Defence Estates)	✓															
NATS		✓														
Natural England						✓	✓	✓								
South Yorkshire Mining Advisory Service								✓								
Yorkshire Water			✓								✓					
	Responses – Three turbine proposal															
Arqiva	✓															

Consultee	Comments / Environmental Issues Raised															
	No Response/No Issues Raised/Keep Informed	Objection	Referral to other Consultee	Planning Policy	Socio-economics/ Tourism/ Land-use	Landscape & Visual	Ecology & Ornithology	Hydrology/Hydrogeology	Cultural Heritage	Noise & Air Quality	Existing Infrastructure	Shadow Flicker	Traffic & Transportation	Cumulative Issues	Construction Works	Operational Works
BT	✓															
CSS	✓															
JRC	✓															
National Grid Wireless	✓															

2.3.2 Identification of Issues

As a result of the scoping responses and on-going consultation, in conjunction with relevant EIA guidance, the following issues have been technically assessed in this environmental statement:

- Landscape and visual;
- Ecology;
- Ornithology;
- Hydrology and hydrogeology;
- Archaeology and cultural heritage;
- Noise;
- Existing infrastructure including aviation and telecommunications;
- Shadow flicker;
- Access and traffic; and
- Socio-economics including recreation and tourism.

All elements of the project, including construction, operation, decommissioning, access tracks and other associated infrastructure, as set out in Chapter 3: *Project Description* of this ES, have been assessed in this ES.

2.4 TECHNICAL ASSESSMENTS

Each of the technical assessments follows a methodical approach, with the principal steps being:

- Description of baseline conditions;
- Prediction of potential effects including cumulative effects;
- Assessment of potential effects;
- Identification of appropriate mitigation measures; and
- Assessment of residual (potential) environmental effects.

Each technical chapter is broadly structured as follows:

- Introduction;
- Assessment methodology and significance criteria;
- Baseline conditions;
- Development design mitigation;

- Assessment of potential effects;
- Mitigation measures and residual effects;
- Cumulative effects assessment;
- Summary of potential effects; and
- Statement of significance.

2.4.1 Baseline description

In order to evaluate the potential environmental effects, information relating to the existing environmental conditions was collected through field work and desktop research. This is known as the baseline. The baseline also extends into the future, although predictions of any changes can involve a high number of variables and be subject to potentially large uncertainties. As a result, in most cases the baseline is assumed to remain unchanged through the operation of the Development. Where this is not the case, this is stated.

The baseline has been used to identify potentially sensitive receptors on and near the site and what changes may take place during the construction, operation and decommissioning of the Development and the effects, if any, that these changes may have on these receptors.

Within each technical assessment, the methods of data collection were discussed with the relevant consultees. Data was also collected from public records and other archive sources and where appropriate field surveys were carried out. The timing of the work and the study area are also outlined within each assessment.

2.4.2 Prediction of Potential Effects

The prediction of potential effects covered the three phases of construction, operation and decommissioning. During each phase of the Development, different environmental effects are likely to arise. For example, during the construction phase traffic volumes are far greater than during the operational life of the wind farm.

Each technical assessment covered:

- Direct and indirect effects;
- Short, medium and long term effects;
- Permanent and temporary effects; and
- Cumulative effects.

Following identification of potential environmental effects, the baseline information was used to predict changes to existing site conditions, and permit an assessment of these changes.

2.4.3 Assessment of Potential Effects

The potential effect that the Development may have on each environmental receptor would be influenced by a combination of the sensitivity or importance of the receptor and the predicted degree of alteration from the baseline state (either positive or negative).

Environmental sensitivity (or importance) may be categorised by a multitude of factors, such as threat to rare or endangered species; transformation of natural landscapes or changes to soil quality and land use. The initial assessment, consultation and scoping phases identified these factors along with the implications of the predicted changes. Unless stated otherwise in each technical chapter, the sensitivity or importance of each identified receptor is defined as high, medium, low or negligible. Likewise, the degree of alteration from the baseline state is defined as large, medium, small or negligible.

The overall significance of a potential environmental effect is determined by the interaction of the above two factors (*i.e.*, sensitivity/importance and predicted degree of alteration from the baseline). In order to evaluate the potential environmental effects, the assessment criteria used are identified and justified within each technical chapter in line with the definitions described above, unless otherwise stated (*e.g.*, the definition of what constitutes a receptor of 'high' sensitivity).

For the purposes of environmental assessment, the significance of an effect is generally assessed as being either:

- **Not significant** – no detectable or material change to a location, environment or species;
- **Minor** – a detectable but non-material change to a location, environment or species;
- **Moderate** – a material, but non-fundamental change to a location, environment or species; or
- **Major** – a fundamental change to a location, environment or species.

Table 2.2 summarises, in the form of a matrix, the generic format by which the significance of a potential effect is determined within each chapter. Effects that would be significant in terms of the EIA Regulations are shaded in Table 2.2 and highlighted in bold in the text of each Chapter.

Table 2.2 Matrix for determining the significance of potential effects

Degree of alteration / Sensitivity of receptor	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Small	Moderate	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Given this methodology, it follows that, regardless of a receptor's importance or sensitivity, there can be no significant effect when the degree of alteration is negligible. Similarly, there can be no significant effect where the importance or sensitivity of the receptor is negligible, regardless of the degree of alteration. It is worth noting that some assessments, for example the ecological impact assessment, will deviate from this methodology and, where this is the case, this is stated within the relevant chapter of this document.

2.4.4 Mitigation Measures and Residual Effects

Each chapter also proposes methods to avoid, reduce or remedy significant adverse effects, these are termed mitigation measures. Where the assessment process has identified any significant adverse effects, mitigation measures have been proposed to reduce these effects. Such measures included the consideration of alternatives; physical design evolutions such as movement or loss of turbines; and management and operational measures.

This strategy of avoidance, reduction and remediation is a hierarchical one which seeks:

- First to avoid potential effects;
- Then to reduce those which remain; and
- Lastly, where no other measures are possible, to propose compensatory measures.

Each specialist consultant has identified appropriate mitigation measures. As indicated previously, these measures have largely been embedded into the overall design strategy rather than "added on" to the proposals. By being flexible with the design, the EIA and the development teams have been able to respond to the findings of consultation and EIA work, and mitigate accordingly, as the project has progressed.

The assessment process concludes with an examination of residual effects after mitigation has been applied, *i.e.*, the overall predicted (potential) effects of the Development.

2.4.5 Cumulative Effect Assessment

In accordance with the EIA Regulations, this ES has given consideration to 'cumulative effects'. By definition, these are effects that result from incremental changes caused by past, present or reasonably foreseeable future actions together with the Development. For the cumulative assessment, two types of effect have been considered:

- The combined effect of individual effects, for example noise, airborne dust or traffic on a single receptor; and
- The combined effects of several developments that may, on an individual basis, be insignificant but, cumulatively, have a significant effect, such as landscape and visual effects of many wind farms.

Of the development schemes that are in the planning system, or consented but not yet constructed or operational, all developments that may lead to potentially significant cumulative effects are other wind farms.

For some of the technical chapters of this ES, specific guidance exists advising that effects associated with *existing* wind farm developments should be considered as cumulative effects. These are Chapter 5: *Landscape* and Visual, Chapter 7: *Ornithology*, Chapter 9: *Cultural Heritage*, and Chapter 10: *Noise*. For other chapters, only wind farms that do not yet exist and are therefore not part of the baseline conditions have been considered.

The majority of effects from other wind farms relate to effects on the landscape and visual resource and are considered in Chapter 5: *Landscape and Visual Assessment* of this ES. Consequently, it is in that chapter that the cumulative developments have been described in most detail. Table 2.3 identifies the wind farm developments within 15 km of the Development that have been considered as cumulative developments in this ES.

Table 2.3 Wind farm developments with the potential for cumulative effects

Development Name	Status	Number of turbines	Distance from Spicer Hill Wind Farm (km)
Royd Moor	Operational	13	0.1
Hazlehead	Consented	3	2.5
Blackstone Edge	In planning	3	0.5
Sheephouse Heights	In planning	5	5.5

2.4.6 Limitations of this ES

A number of assumptions have been made during preparation of this ES, which are as set out below. Assumptions specific to certain environmental aspects are discussed in the relevant chapters of the ES. The assumptions are:

- The principal land uses adjacent to the site remain as they are at the time of the ES application submission, except in cases where planning permission has already been granted for development. In these cases, it is assumed that the approved development will take place, and these have been treated as contributing to "cumulative" effects; and
- Information provided by third parties, including publicly-available information and databases is correct at the time of drafting the ES.

The EIA has been subject to the following limitations:

- Baseline conditions have been assumed to be accurate at the time of the physical surveys but, due to the dynamic nature of the environment, conditions may change during the site preparation, construction and operational phases; and
- The assessment of cumulative effects has been reliant on the availability of information on existing wind farm, and other, developments.