

9. Climate Change Issues

9.1 Overview

This Chapter will consider the potential effects of the proposed wind farm in the context of global climate change. This will include an explanation of the benefits which the scheme will have in the context of the issue of climate change and the need for renewable energy.

10. Landscape and Visual Impact Assessment

10.1 Overview

A full Landscape and Visual Impact Assessment (LVIA) will be undertaken in accordance with all current best practice guidance, including:

- *The Guidelines for Landscape and Visual Impact Assessment*, 2nd Edition (2002) Landscape Institute and the Institute for Environmental Management and Assessment;
- *The Guidelines for Environmental Impact Assessment* (2004) Institute for Environmental Management and Assessment.
- *Guidelines for Landscape Character Assessment* (2002), Countryside Agency and SNH.

Consideration will also be given to the following documents:

- *Visual Representation of Windfarms – Good Practice Guidance* (2006) H+M and Envision for Scottish Natural Heritage, The Scottish Renewables Forum and the Scottish Society of Directors of Planning
- *Landscape Appraisal for Onshore Wind Development* (2003), University of Newcastle;
- *Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes* (2001), Scottish Natural Heritage;
- *Guidance on the Cumulative Effects of Wind Farms* (2nd Version) (revised 13.04.05), SNH;
- *Visual Assessment of Wind Farms – Best Practice* (2002), University of Newcastle, Scottish Natural Heritage commissioned report F01AA303A.

10.2 Distinction between Landscape and Visual Impacts

In accordance with published guidance, landscape and visual impacts will be assessed separately although the procedure for assessing each of these is closely linked. A clear distinction will be drawn between landscape and visual impacts as described below:

- *Landscape impacts* relate to the effects of the proposals on the physical and other characteristics of the landscape and its resulting character and quality.

- *Visual impacts* relate to the effects on views experienced by visual receptors (e.g. residents, footpath users, tourist's etc) and on the visual amenity experienced by those people.

10.3 Types of Impact Assessed

The LVIA will assess both the permanent impacts relating to the operational lifetime of the windfarm and also the short-term impacts associated with the construction of the windfarm. It will also consider any residual impacts once the windfarm has been decommissioned.

The LVIA will consider direct and indirect impacts. Thus, it will not only assess the impacts associated with the turbines but also any related impacts resulting from the substation, underground cabling, site access tracks and site entrance. Impacts associated with the grid connection will be subject to a separate application and will not be covered in the ES.

The cumulative impact of other windfarms within 20km of the site which are either operational, under construction, consented or the subject of a full planning application will also be assessed. Best practice guidelines identify three main types of cumulative visual impact:

- *Simultaneous (or combined) visibility* – where two or more sites are visible from a fixed viewpoint in the same arc of view.
- *Successive visibility* – where two or more sites are visible from a fixed viewpoint, but the observer is required to turn to see the different sites.
- *Sequential visibility* – where two or more sites are not visible at one location, but would be seen as the observer moves along a linear route. This is commonly experienced when travelling along a linear route, for example, a road or public right of way.

Study Area for Landscape and Visual Assessment

The study area for the landscape and visual impact assessment will be taken to be a 20km radius from the site in all directions.

10.4 Methodology

The LVIA will be undertaken in 6 stages:

- Baseline data collection and analysis;
- Description of the baseline landscape and visual amenity (including landscape classification and identification of baseline landscape and visual sensitivity);
- Development of mitigation measures;
- Identification of potential residual impacts on the landscape and views;
- Evaluation of the significance of impacts on landscape and visual amenity; and
- Presentation of findings in the ES.

The LVIA will follow an established procedure for determining impact significance. The sensitivity of the baseline landscape resource and visual amenity will be determined and cross-referenced against the magnitude of change caused by the development.

Landscape Assessment Methodology

Baseline information on the landscape will be gathered through a combination of desk studies, consultation and field surveys.

Aerial photographs and OS maps at 1:250,000, 1:50,000, 1:25,000 and 1:10,000 scales will be reviewed and information about the following will be analysed:

- Local geology and soils;
- Topography;
- Current & historical land use;
- Climate;
- Public Rights of Way locations, Common land and open access land;
- Listed buildings and Scheduled Ancient Monuments (SAMs);
- Historic Parks and Designed Landscapes;

- Battlefields;
- Conservation Areas;
- National, regional and local landscape designations;

Consultations on landscape and visual issues will be held with relevant local authorities and Natural England. Valued/designated landscapes and visual resources will be identified and confirmed at the national, regional and local levels.

A series of field surveys will be carried out to gain a better understanding of the landscape, to determine its character and condition and identify visual receptors and visual barriers. The surveys will establish the landscape resources that combine to give the landscape a distinct sense of place.

The baseline studies will identify the landscape resources and character of the surrounding area. The assessment will identify how the development will affect individual features and the wider landscape character.

Visual Assessment Methodology

Through the production and review of theoretical Zones of Visual Influence (ZVI), the geographical extent of visibility will be established at hub and blade tip heights. This will help to identify sensitive visual receptors in the surrounding area.

Due to the likely extent of the ZVI, it would be impossible to assess the visual impact on every individual visual receptor within the ZVI of the scheme. A series of representative viewpoints will therefore be agreed with the appropriate local authorities and other relevant stakeholders. These viewpoints will represent different visual receptor types (e.g. observers from residential properties, footpaths, roads, tourist attractions etc) and also at different distances and directions from the scheme. Initial discussion regarding the selection of viewpoints has already commenced.

Mitigation Measures

The development of the windfarm proposals and the EIA is an iterative process. Baseline information regarding landscape features and sensitive visual receptors will be used to refine the final layout of the turbines on the site as appropriate.

Mitigation measures will be developed in tandem with the layout to minimise adverse impacts. Options for screening various components of the scheme will be investigated and adopted as mitigation measures where appropriate.

Potential Cumulative Impacts

Cumulative landscape and visual impacts will be assessed where relevant. The assessment will consider proposals within 20km of the site which have formally entered the planning system through submission of a full planning application, those sites which have been consented and those under construction or operation.

In identifying potential cumulative effects, a similar technique will be adopted to that used in the visual assessment. In the first instance, ZVI analysis will be used to identify the degree of potential overlap between ZVI's of the individual developments. Photomontages may also be used to illustrate viewpoints where two or more windfarms are likely to be visible. The significance of cumulative impacts will be established by cross-referencing the sensitivity of viewpoints where more than one site would be visible and the cumulative magnitude of impact on each particular view.

Significance of Impacts

It is anticipated from the outset that the proposed wind farm would give rise to some significant effects. This is almost inevitable with any commercial wind energy development in the UK due to the nature and height of the turbines and these impacts will need to be balanced against the other benefits of the scheme. Not all landscape and visual effects arising would be significant and visibility of the turbines does not necessarily equate to a significant impact in terms of the EIA regulations.

In the LVIA, significance will be assessed in terms of varying degree. Those impacts identified as being of substantial (and in some cases moderate) significance may be regarded as likely to be equivalent to significant impacts when discussed in terms of the 1999 Environmental Impact Assessment Regulations.

Many people have a predisposition towards wind turbines. It is accepted that some people consider wind turbines to be unattractive but many people also enjoy the sight of them. The assessment, therefore, will not attempt to influence personal opinion about the aesthetic appearance of windfarms. It will, as far as is possible, provide an objective judgement on the significance of landscape and visual impacts and

comment on the acceptability of the scheme in terms of fit with the existing landscape.

11. Ecology

11.1 Overview

This chapter of the ES will evaluate the effects of the wind farm on the ecology resource. In summary, the scope of the ecological assessment will be to:

- Identify statutory and non-statutory designated areas within or adjacent to the site;
- Identify any rare, notable or protected species or habitats within or adjacent to the site;
- Consider the potential for effects on valued receptors arising from the Development within and adjacent to the site;
- Describe mitigation of adverse effects within or adjacent to the site;
- Describe measures for further enhancement to the site in addition to mitigation; and
- Identify residual effects taking into account the above assessment.

The principal issues relating to ecology and wind turbine developments are as follows:

- Direct habitat loss due to land take by turbine foundations, tracks and ancillary structures;
- Indirect habitat loss effects, i.e. the displacement of species from the proximity of the wind turbines as a consequence of construction work, or due to the operation phase of the wind farm; and
- The effect of collisions with rotating turbine blades, which is of particular relevance to raptors or concentrations of wildfowl. Also, the issue of barotrauma with respect to bats.

10.2 Legislation and Guidance

Ecological features are protected under various UK and European legislative instruments principally consisting of:

- Wildlife and Countryside Act (WCA) 1981, as amended in quinquennial review and by the Countryside and Rights of Way (CRoW) Act 2000;
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended by the Conservation (Natural Habitats. &c.) (Amendment) Regulations 2007);

- Protection of Badgers Act 1992;
- Hedgerow Regulations 1997;
- Environmental Impact Assessment Regulations 1999; and
- Natural Environment and Rural Communities Act 2006

Other documents relevant to this chapter are:

- The UK Biodiversity Action Plan (BAP);
- Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9); and

10.3 Methodology

The methodology to be used for this assessment will be based on the Institute for Ecology and Environmental Management (IEEM) guidelines, which will be followed by assigning value to a site or feature of interest and in assessing the magnitude of the potential effect. The IEEM guidelines have no legal standing and are not a substitute for professional judgment and interpretation. However, they are well established and recognised guidelines which are utilised throughout the industry.

The IEEM guidelines set out the following process for assessment involving:

- Determining the nature conservation value of the ecology present within the site and adjacent areas that may be affected by the development, and the level of sensitivity of the receptor to the development;
- Identifying potential effects based on the nature of the construction, operation and decommissioning of the development;
- Determining the magnitude of the potential effects, i.e., the size of the change in the population / status of the receptor as a result of the development. Where the receptor is a species of fauna this includes consideration of the behavioural sensitivity of the receptor and the duration and reversibility of the potential effect;
- Determining the significance of the effects based on the interaction between the magnitude of the effect and the nature conservation value of the receptor likely to be affected;
- Identifying mitigation and compensation measures proposed to avoid, reduce or remedy significant adverse effects; and
- Determining the residual effect significance after the proposed mitigation measures have been implemented, including a description of any legal and policy consequences.

11.4 Extended Phase 1 Habitat Survey Findings and additional Survey Work

An 'extended' Phase 1 Habitat Survey (JNCC 1993 and IEA 1995) has been undertaken by Andrew McCarthy Associates in January 2009 to record and map broad habitat types of the site.

A summary of this survey work is set out below along with the proposed additional surveys to be undertaken as part of the Ecology Assessment. Much of this additional survey work has already been undertaken in the summer of 2009 and the initial findings of this survey work are also set out below where these are available.

Habitats and botany

The site is dominated by cultivated arable land of low ecological value and it is within such land that all turbines will be constructed. The plantation woodlands are also of limited intrinsic value.

There are a number of habitats of greater ecological value by virtue of their botanical diversity which could potentially be affected by site access/infrastructure once details of these are confirmed. These comprise sections of species rich hedgerow and patches of botanically diverse calcareous grassland, including a protected roadside verge and quarry. These areas will be avoided as far as possible by utilising existing gaps in hedgerows and routing access tracks and other infrastructure away from grassland sites. If this is not possible, consideration will be given to translocation of grassland to suitable receptor sites. Any sections of hedgerow to be lost would be replaced with equivalent or greater lengths planted with appropriate native species.

There is also potential to enhance habitats within the site through extending and buffering diverse grassland areas, gapping up hedgerows, sympathetic hedgerow and grassland management and establishing new sections of hedgerow. Habitat replacement/translocation will be undertaken as necessary and creation be carried out under a Biodiversity Management Plan which integrates habitat mitigation with that required for protected species.

Badger

All turbines and associated infrastructure will be located more than 30m from any active and disused setts.

Sensitive methods of working near setts, or near well used badger feeding/commuting areas will be adopted during the construction phase as required.