

Appendix 9/1

LVIA Methodology

Introduction

A Landscape and Visual Impact Assessment has been carried out in accordance with the Guidelines for Landscape and Visual Impact Assessment¹.

A desk top review and site visit of the existing site was undertaken to identify potential landscape and visual receptors, such as footpath users, residents, designated landscapes and landscape character areas.

Sensitivities to the proposed development were assigned to the identified receptors. The potential magnitude of change caused by the proposed development was assessed with reference to site survey work, photographs, the proposed development drawings, computer modelling and visualisations of the proposals. A combination of the sensitivity and magnitude of change was used to identify the likely level of final effect. This process was designed to be based on objective measurement of various criteria, but ultimately is a matter of professional judgement.

Current Guidance and Source Data

The LVIA has been based on guidance provided in:

- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment 2002);
- Landscape Character Assessment (The Countryside Agency and Scottish Natural Heritage 2002);
- LANDMAP – CCW online resources and data sets
- Visual Representation of Windfarms: Best Practice (University of Newcastle (2002), SNH F01AA303A; and
- Visual Representation of Wind farms - Good Practice Guidance (Horner + Maclennan & Envision for Scottish Natural Heritage 2006).

The latter two guidance references have been used to determine the correct presentation of viewpoint drawings and visualisations.

The landscape baseline context for the agreed study area has been assessed and classified taking account of the following National Landscape Character Assessment²:

- Thames Basin Heaths;

The detailed landscape baseline has also been assessed and classified taking account of the Hampshire County Council Integrated Character Assessment³.

These assessments have been considered and verified where possible on site and for the purposes of the LVIA, the findings of these assessments have been considered to define the baseline landscape character.

¹ Landscape Institute and Institute of Environmental Management and Assessment. (2002) Guidelines for Landscape and Visual Impact Assessment, 2nd Ed.

² <http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx>

³ <http://www.hart.gov.uk/index/top-planning/conservation-and-listed-buildings-2/planning-landscape-assessment.htm>

In addition the following sources were consulted in order to compile the baseline information:

- Register of Historic Landscapes Parks and Gardens;
- Ordnance Survey Maps;
- aerial photography; and
- information provided through consultation.

Following a desk study, the study area was visited on January 3rd 2013 during a period of overcast but clear weather, to verify landscape and visual receptors and related effects. The assessment has been carried out on the basis of clear visibility.

Study Area

The study area for the LVIA covers a 3 km radius from the outer edges of the site. This limit to the study area was defined by;

- initial desk studies;
- examination of base mapping data;
- professional experience; and
- field work.

The extent study area was agreed during the scoping process

Assessment Process

Baseline

In order to identify the parts of the study area which may be affected by the proposed development were generated to identify the theoretical extent of the development's visibility within the study area.

The key landscape characteristics of each landscape character type/area in the study area with predicted visibility of the proposed development have been described, together with the nature of the existing views and the sensitivity of each landscape character type/area to the type of development proposed.

A selection of viewpoints was chosen and agreed in consultation. These viewpoints are considered to be representative of the main sensitive receptors in the study area and are listed in Table 9-5 in the main LVIA.

An assessment of the predicted visibility of the proposed development from each of these viewpoints has been carried out through analysis and field investigation and is recorded in the LVIA text. The visibility assessment includes a description of the existing viewpoint and an assessment of the sensitivity of each viewpoint to the development. Viewpoints concentrate on publicly accessible areas and include outdoor recreational, road, and public footpath receptors.

Mitigation Measures and Design

Landscape and visual considerations have influenced the design of the proposed development. Mitigation measures which have been incorporated into the final design and layout of the proposed development are described.

Assessment of Residual Effects

An assessment of the significance of the residual effects has been carried out to determine the impact of the development in this locality in relation to the landscape and visual amenity. The significance of a landscape or visual effect is a function of the sensitivity to change that would occur as a result of the proposed development.

Evaluation Criteria

The aim of the LVIA is to identify, predict and evaluate potential landscape and visual impacts arising from the proposed development. Wherever possible, identified impacts are quantified, but the nature of landscape and visual assessment requires interpretation by professional judgement. In order to provide a level of consistency to the assessment, landscape sensitivity to change, the prediction of magnitude of change and assessment of significance of the residual effects has been based on pre-defined criteria which are based on guidance provided in the Guidelines for Landscape and Visual Impact Assessment, as refined for the purposes of the assessment and taking account of guidance.

Landscape sensitivity

The sensitivity of the landscape to change is defined as high, medium, low or negligible based on professional interpretation of a combination of parameters including:

- the value placed on the landscape as defined by designation or other identifiable form of recognition;
- the scale and pattern of the landscape and its elements/features;
- the simplicity or complexity of the landscape;
- the nature of skylines;
- landscape quality or condition;
- existing land-use;
- visual enclosure/openness of views and distribution of visual receptors; and
- the scope for mitigation, which would be in character with the existing landscape.

Viewpoint Sensitivity

Viewpoint sensitivity is defined as high, medium, low or negligible based on an interpretation of a combination of parameters, as follows:

- location and context of the viewpoint;
- land use or main activity at the viewpoint;
- frequency and duration of use; and
- landscape character and quality of the intervening landscape.

In relation to land use at the viewpoint, visual sensitivity is defined below in Table 9-1-1.

Table 9-1-1 Visual Sensitivity in relation to Main Activity at Viewpoint

Visual sensitivity	Land use
High	Users of outdoor recreational facilities including recreational footpaths, cycle routes or rights of way, whose attention may be focused on the landscape; important landscape features with physical, cultural or historic attributes; views from residential buildings; beauty spots or picnic areas.
Medium	People travelling through the landscape on roads, trains or other transport routes.
Low	People engaged in outdoor sports or recreation (other than appreciation of the landscape), commercial buildings, and other locations where people's attention may be focused on their work or activity.
Negligible	People in commercial buildings, and other locations where people's attention may be focused on their work or activity.

Magnitude of Change

The magnitude of change arising from the proposed development is described as substantial, moderate, slight or negligible based on the interpretation of a combination of largely quantifiable parameters, as follows:

- extent of the proposed development in the view, e.g. the horizontal angle subtended by the proposed development;
- loss or alteration of landscape elements/features/characteristics;
- distance of the viewpoint from the proposed development;
- duration of the predicted impact;
- angle of view in relation to main receptor activity;
- degree of contrast;
- visual permeability of proposed development – i.e. extent to which views would be blocked or would be retained, albeit interrupted and altered;
- background to the proposed development; and
- extent and nature of other built development visible.

The assessment may distinguish between magnitude of landscape change and magnitude of visual change. In the case of magnitude of change occurring within designated areas or along roads, railways or recreational routes, the proportion of the designated area or length of the route affected by the proposals is also a consideration.

The criteria utilised in ascribing magnitude of change throughout this assessment are as follows:

- **Substantial Change:** Total loss or considerable alteration to key elements/features/characteristics of the landscape character or view, resulting in a substantial change to the baseline condition;
- **Moderate Change:** Partial loss or alteration to one or more key elements/features/characteristics of the landscape character or view. Change perceived as a partial or localised change within a broader, unaltered context;
- **Slight Change:** Limited loss or small alteration to one or more key elements/features/characteristics of the existing landscape character or view. Change is discernible but underlying landscape character or view composition would be similar to baseline; and
- **Negligible:** Very limited or imperceptible loss or alteration to one or more key elements/characteristics of the baseline. Change may be barely distinguishable.

Assessment of Effects and Identification of Significant Effects

Landscape or visual impacts have been assessed as major, major/moderate, moderate, moderate/minor, minor, minor/negligible or none. These categories have been based on combining viewpoint or landscape sensitivity and predicted magnitude of change (see Table 9-1-2 below).

Table 9-1-2 Landscape and Visual Residual Effects

Sensitivity	Magnitude of Change			
	Substantial	Moderate	Slight	Negligible
High	Major	Major/moderate	Moderate	Moderate/minor
Medium	Major/moderate	Moderate	Moderate/minor	Minor
Low	Moderate	Moderate/minor	Minor	Minor/negligible
Negligible	Moderate/minor	Minor	Minor/negligible	None

The matrix is not used as a prescriptive tool, and the methodology and analysis of potential effects at any particular location must allow for the exercise of professional judgement. In some instances a particular parameter may be considered as having a determining effect on the analysis.

Where the landscape or visual impact has been classified as **Major** or **Major/moderate**, this is considered to be equivalent to a significant effect referred to in the EIA Regulations based on the above noted definitions of receptor sensitivities and magnitudes of change.

Table 9-1-3 Description of Significance Criteria for Landscape and Visual Impact

Level of effect	Definition
No Impact	The proposed scheme has no effect on landscape or visual receptors.
Negligible	The proposed scheme is appropriate in its context. It may be difficult to differentiate from its surroundings and would affect very few or no receptors.
Minor	The proposed scheme would cause a barely perceptible impact, on either landscape or visual amenity and would affect few receptors.
Moderate	The proposed scheme would cause a noticeable difference to the landscape, and would affect several receptors. However, this change would not alter the essential character of the local landscape or that of the view.
Major	The proposed scheme would change the character and/or appearance of the landscape for a long period of time or permanently. It would affect many receptors. This change would therefore alter the character of the landscape in this locality, or the character of the view.

Nature of Effects

The nature of the effects identified can be temporary, long term or permanent and beneficial, neutral or adverse.

Throughout the LVIA, the effects of the proposed development on landscape character (out with the effects on landscape fabric and character identified within the proposed Site boundary) have been assessed in relation to the key characteristics of each landscape character area predicted to have visibility of the proposed turbines and therefore potentially impacted by the proposed development. The aim is to provide an objective assessment of the relationship between the proposed development and the landscape in which it would be located and seen.

It is considered that the effects on landscape character arising from the introduction of large scale operations and developments into a rural landscape are likely to be adverse. However, it is important to consider the nature of the proposed change in the context of the key characteristics of the landscape and the extent to which these may be more, or less, sensitive to change of the nature associated with the defined development and accordingly, more, or less, able to accommodate the predicted changes.

In relation to the effects of development on visual amenity, there is a wide spectrum of opinion regarding the nature of effects (beneficial, neutral or adverse) on visual amenity has been made in this assessment.

Illustrative Tools

The landform/bare earth wirelines have been generated based on Ordnance Survey (OS) digital terrain data supplied as gridded height data at 50m interval resolution, and therefore illustrate the maximum extent of visibility, because they do not take account of the screening effect of local landform or vegetation.

It should be noted that some variation may occur between the landform in the foreground of photographed views and the foreground terrain shown in a small number of wireline images. This is due to the interval of surveyed grid points in the DTM model which results in the interpolation of levels between grid points.

The photomontages have been prepared by combining a wireline of the view of the proposed development with the photograph of the existing view. The resulting images should be viewed preferably in the field, at each viewpoint location. A viewing distance of 300mm, as noted on the visualisations, should be used to most closely replicate the view which would be obtained from the viewpoint.

It should be noted that whilst photography is a valuable tool to assist in the visualisation process, it cannot be expected to replicate the actual view or predicted view which would be attained on the ground.

Visualisation Methodology

The photographs were taken by a professional photographer using a Nikon D90s digital camera with a 35 mm lens. This was attached to a tripod with a panoramic plate and nodal point to ensure consistent frame overlap and minimal parallax error.

Photograph Stitching Methodology

To provide maximum levels of details and a full width view for context purposes, the photographic frames have been stitched together.

The frames were stitched together using the Photomerge command in the Adobe Photoshop CS4 software package.

The resultant image is a composite of several 50 mm photographs and has been produced as a cylindrical projection. The resultant image should be curved and viewed at the stated viewing distance to best represent the actual view at the viewpoint location.

Methodology for the Production of Computer Visualisations

The computer generated visualisations were created using LSS (Land Survey Systems) software and were derived from a DTM model of the study area using Ordnance Survey Land Form Profile height data. This data is on a 10 m grid and provides a good representation of the landscape at large scales. It is in general use due to its balance between DTM size and accuracy.

The photographs were scaled in Coreldraw X5 to a smaller height of 202 mm, for the production of the visualisations, which use a 300 mm viewing distance. The photographs and visualisations were imported into Coreldraw X5 as illustrated on the viewpoint drawings.

The horizontal position of the visualisation relative to the photograph was matched using landform features. The matching process is dependent upon a number of variables including the accuracy of DTM data and the accuracy of the GPS used in the positioning of the viewpoint. Occasional small errors are unavoidable, although every attempt is made to minimise these where possible.

Both photograph and visualisation were then clipped to boxes within the drawing frame while retaining their scaling and positions.