

3. SITE SELECTION

3.1 INTRODUCTION

Chapter 1 introduced the proposed Viking Wind Farm development and explained the different backgrounds of the two partners in the project, Viking Energy Ltd and Scottish and Southern Energy. Chapter 2 described the background to the current proposal, and explained why on-shore wind energy has been selected as the preferred technology by the Viking Energy Partnership. It also explained that Scottish and Southern Energy is also developing other renewable energy technologies elsewhere. This chapter explains the process which led to the selection by the Partnership of the Viking Wind Farm site.

As with the appraisal of alternative technologies, site selection was undertaken independently by the two Viking Energy partners. For Viking Energy Limited, the scope was restricted to Shetland, for economic and social reasons, and the objective was to identify a single site. For Scottish and Southern Energy, operating in a national context and with broader strategy, the site selection process differed from many other types of development in that the site search did not aim to identify a single site, but rather a number of sites. However, having identified Shetland in general as a potential area, the objective was the same as that of Viking Energy Limited, namely to identify a suitable site.

The following paragraphs summarise the key elements of the processes undertaken independently by the two Viking Energy partners, and which resulted in the selection of adjacent sites which ultimately came together as the Viking Wind Farm site.

3.2 SITE SELECTION PROCESS

3.2.1 Selection criteria

There are a number of key technical and environmental factors that influence the feasibility of a wind farm.

The key technical requirements are:

- Adequate wind speed;
- sufficient area;
- appropriate ground conditions;
- access to the electricity grid;
- feasibility of access for abnormal loads;
- suitable terrain and topography;
- agreements with site landowners.

A specific aspect of wind energy development on Shetland is that there is a requirement for a transmission connection to mainland Scotland, since for electrical reasons the ‘island’

network cannot accommodate further wind energy generation. The cost of such a connection would be substantial, and it is therefore essential that both the wind farm and the connection achieve economies of scale to enable the project to be feasible. For the wind farm this means achieving a significant capacity and hence output; in turn this necessitates a large site area.

The proposed sub-sea connection to the mainland grid is the subject of a separate planning application with its own associated Environmental Statement.

The key environmental constraints considered comprised:

- Natural and built heritage designations;
- proximity to centres of population;
- airfield safeguarding;
- MOD training areas.

Other constraints included:

- Cumulative effects with other developments;
- visibility in sensitive areas;
- potential interference with telecommunications;
- conflicts with land use planning guidance (discussed further in Chapter 7);
- distance from entry ports (discussed further in Chapter 15).

To take account of these and other factors, the Viking Energy partners undertook a site selection exercise. The process, which is broadly based on British Wind Energy Association Guidelines (BWEA 1994), is outlined in the following paragraphs.

The process also takes into account most of the factors considered by SNH in its Strategic Locational Guidance (SNH 2002, updated 2005), which provides a broad overview of where SNH considers that there is likely to be the greatest scope for the development of wind farms, and also where there are the most significant constraints in terms of the natural heritage.

The summary map developed by SNH classifies Scotland as three key zones:

- Zone 3: High Sensitivity. These areas have high sensitivities to development of wind farms and therefore the greatest constraints apply. In general, proposals for development in these areas are unlikely to be acceptable in natural heritage terms.
- Zone 2: Medium Sensitivity. These areas have some sensitivities to wind farm development. However, with careful siting and design, proposals may be acceptable in natural heritage terms.
- Zone 1: Low Sensitivity. These areas have the least sensitivities to development.

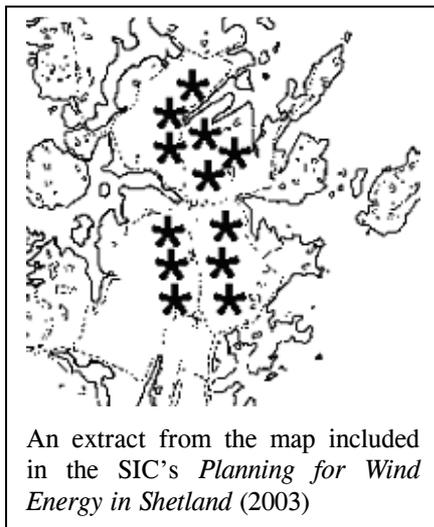
The area of the proposed Viking Wind Farm development is partly located within an area classified as Zone 1 (Low Sensitivity), and partly as Zone 1/2 (Low to Medium Sensitivity). The Low to Medium Sensitivity classification applies to areas within 10 km of National Scenic Areas, which are discussed in more detail in Chapter 8.

3.2.2 Stage 1: Site search and initial evaluation

This element of the process was essentially desk based, and used Ordnance Survey maps to identify sites with potentially suitable topography, terrain, and extent, then other map data to assess the site against the following criteria:

- Estimated wind speed;
- access to grid connection;
- proximity of statutory designations including: Sites of Special Scientific Interest, Special Protection Areas, Special Areas of Conservation, Ramsar Sites, National Nature Reserves and National Scenic Areas.

The site search took full account of Shetland Islands Council's draft locational guidance for wind farms, *Planning for Wind Energy in Shetland* (Shetland Islands Council 2003). The report addressed the need for a land use planning strategy to guide large scale wind energy developments in Shetland, given that interest in such projects was being expressed by developers. It enumerated the possible environmental effects of such development and outlined the process by which any proposal would be considered. In particular, it dealt with the safeguards that would need to be in place were the Council to place itself in the position of both co-developer and planning authority.



The paper referred to the established policies contained in the approved Structure Plan. The paper proposed a draft preferred area for large scale wind farm development. This was based on a consideration of Structure Plan and Local Plan policies; on some knowledge, gained from potential developers, of likely technical parameters and preferences; and on preliminary discussions with Scottish Natural Heritage. The boundaries of the proposed area were, deliberately, not defined precisely, in recognition of the need for further investigation. However, on the basis of a preliminary analysis, the preferred area did not impinge on any major area of nature conservation interest or conflict either with Local Protection Areas identified in the Local Plan or the National

Scenic Area. It was nevertheless recognised that substantial further work would be required if the detailed implications of development were to be properly examined.

Planning for Wind Energy in Shetland was intended only to provide locational guidance in general terms. However, the land area proposed for the Viking Wind Farm corresponds well with the 'preferred area' identified in the document.

Sites which satisfied the criteria were visited to 'ground truth' the desk based information and to make an initial evaluation of the likely feasibility of access for abnormal loads, and to identify any local site factors. Landowners were then identified and contacted to ascertain if there was interest in agreeing to a potential wind farm development. Such an agreement concluded Stage 1. Many sites were eliminated by this evaluation stage.

3.2.3 Stage 2: Feasibility

This stage considered in more detail the feasibility of the sites not eliminated by Stage 1, generally by means of the following studies:

- An abnormal load access study;
- identification of third party landowners whose permission may be required for access;
- a grid feasibility study;
- an assessment of ground conditions;
- a wind resource evaluation by means of anemometers on the site.

This process also included informal consultation with relevant authorities, agencies and organisations, to obtain initial advice, information and informal opinion on the likely feasibility of the project. Consultees included:

- The Shetland Islands Council;
- Scottish Natural Heritage (SNH);
- Scottish Environment Protection Agency (SEPA);
- Royal Society for the Protection of Birds (RSPB);
- Historic Scotland;
- Ministry of Defence;
- Civil Aviation Authority (CAA);
- National Air Traffic Services (NATS).

An early programme of bird surveys was also initiated at this stage, both to inform the feasibility and to lead into any subsequent EIA process. This also allowed an opportunity to refine or alter the area under consideration.

As a result of work done in this stage, it was concluded that, on available information, the Viking Wind Farm site should be suitable for development as a wind farm, subject to obtaining relevant consents. At other sites it was concluded that it would not be feasible to develop a wind farm of sufficient scale.

3.2.4 Stage 3: Design and environmental assessment

Stage 3 comprised the undertaking of an Environmental Impact Assessment to inform the detailed design of the wind farm and associated ancillary works, along with other technical considerations. The Environmental Impact Assessment has resulted in fundamental changes to the design of the wind farm, including reducing its overall size and the number of turbines proposed, and avoiding, where possible, areas of deep peat. More details of this process are provided in Chapter 4, in particular in relation to the design strategy (section 4.10 and Appendix 4.6, the Design Statement) and design alternatives (section 4.11).

After finalising the layout of the proposed wind farm, an application boundary was finalised and this is shown in Figure 3.1. The boundary goes well beyond the area of

construction and takes in a wide area of land to ensure that it includes all potential works that could be associated with the development. However, as discussed in subsequent chapters the ES takes into account potential environmental effects out with the boundary of the site.

3.3 REFERENCES

BWEA (1994) Best practice guidelines for wind energy development. British Wind Energy Association, London.

Shetland Islands Council (2003), 'Planning for Wind Energy in Shetland'. Shetland Islands Council, Shetland.

SNH (2002) Strategic Locational Guidance for onshore windfarms in respect of the Natural Heritage: Policy Statement No. 02/02. Scottish Natural Heritage, Inverness.