



## **REPORT**

**To: Shetland Islands Council**

**14 December 2010**

**From: Head of Planning  
Infrastructure Services Department**

### **CONSULTATION ON SECTION 36 APPLICATION ETC ON THE VIKING WIND FARM**

#### **1. Introduction**

- 1.1 This is an application for consent under s36 of The Electricity Act 1989, The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000. The Scottish Ministers will at the same time as making a determination on the s36 application make one in relation to deemed planning permission. The Council, as planning authority, has been consulted on the above proposal and is expected to provide its opinion, taking account of all relevant Council policies and the views of the community.
- 1.2 Viking Energy Partnership first submitted the application (accompanied by an Environmental Statement (ES)) on 19 May 2009. On 7 October 2009 Viking Energy issued a statement to the press to the effect that it would be submitting an addendum to its application; the Partnership submitted and advertised the Addendum to the ES on 1 October 2010.
- 1.3 The consultation period for all statutory consultees, other interested parties and the general public has closed and will close for the Council on 18 December 2010.
- 1.4 A full timeline of events since the application was first submitted is attached as Appendix 1.
- 1.5 The development area of the proposal now for consideration stretches from near Scatsta Airfield in the north of mainland Shetland to near Tresta in the southwest and South Nesting in the southeast. The development area consists of 3 sectors, Delting (north western sector, 24 turbines), Kergord (south western sector, 46 turbines) and Nesting (south eastern sector, 57 turbines).
- 1.6 It should be noted that, whilst the turbines and infrastructure have been removed at Collafirth, that area remains within the application site boundary so, in theory, consent could be granted in principle for wind energy in that area unless the Scottish Government specifically exclude it by specifically stating that the plan showing the positions of the proposed turbines and the list providing the grid references of

these provided within the Environmental Statement (ES) and amended by the Addendum, are approved details.

- 1.7 The proposed development consists of the following:
- 127 No. 3.6MW wind turbines, each 90 metres (295ft) in height to hub and 145m (475ft) to blade tip.
  - Approximately 104km (approx 65 miles) of associated access tracks of varying widths up to 10 metres; double width tracks to be reduced to single width after construction of the wind farm is complete.
  - 79 No. Stream crossings.
  - Up to 13 No. Quarries and Borrow Pits to extract 1,470,000m<sup>3</sup> cubic metres of rock by drilling and blasting.
  - Excavation of approximately 650,284m<sup>3</sup> - 919,310m<sup>3</sup> peat, depending upon final design, with about 453,379m<sup>3</sup> – 403,207m<sup>3</sup> reused, depending upon final design (e.g. to fill quarries).
  - 3 No. electrical substations.
  - 9 No. permanent 90m (295ft) lattice tower Anemometry masts.
  - Buried cabling between the turbines and substations.
  - Pole mounted transmission line from the substations to the main converter station (the converter station is subject of a separate planning application and EIA - application ref: 2009/224/PCO).
  - Disturbance footprint up to approximately 232 hectares.
  - Permanently affected area approximately 104 hectares.
  - Site area extending to 12,949Ha (129km<sup>2</sup> or approximately 50 square miles).
- 1.8 There will be ancillary works during construction, including:
- 7 No. 1000m<sup>2</sup> temporary construction compounds.
  - Widening/ alterations to the local road network, including bridge strengthening.
  - Approximately 10,000 vehicle movements during construction, including about 6,600 for concrete, almost 2,000 for cabling sand and about 1,270 for turbine components.
  - Vehicle movements for turbine components are said to take place at a rate of 5 per day over 254 days.
  - A number of temporary wind data masts (estimated by the developer as “no more than 3 pair”) may be required during the construction phase but would be subject to separate consent applications.
- 1.9 The applicants expect construction to be phased over a 5-year period, working mainly in the summer months to avoid bad weather and low light levels
- 1.10 The application proposals, including locations of turbines, access tracks, anemometry masts, borrow pits, construction compounds and electrical substations are all as described in Chapter A4 of the 2010 Addendum, read together with Chapter 4 of the 2009 Environmental Statement. The list of turbine and mast coordinates is shown in Appendix A4.2 and the wind farm layout is shown on the plans forming the following figures - Figure A4.1.1 (Deltling) and Figure

A4.1.2 (Nesting and Kergord). Readers should read all the original (2009) application submissions, together with the (2010) Addendum submissions should they wish to familiarise themselves with all aspects of the proposal.

1.11 Previous decisions relevant to this application are as follows:

- PL-36-07-F (Planning Board 26 September 2007 – Min Ref 35-07) considered how the Council could respond to an application such as the one currently under consideration. The report mostly dealt with the process that was either completed before submission of the current application or has now been followed since its submission, including impact on the service provided by the Planning Service to its customers in general. It also proposed that the Head of Planning determine the hearings process to be applied. In this last matter, it was superseded by the report number LA-21-F, referred to below.
- LA-21-F (Shetland Islands Council 15 July 2009 – Min Ref 105-09) Resolving Conflicts of Interest. Recommended how the acknowledged conflicts of interest could be dealt with and that a public hearing be arranged to hear the views of the applicant and all those with an interest in the proposal. The Council noted the report with the amendment that a series of public meetings be held to hear the views of the general public. The Council held those meetings on 28, 29 and 30 September and 1 October 2009 in Brae Hall, Aith Public Hall, Dunrossness Public Hall and Lerwick Town Hall. The transcripts of those meetings were forwarded to the Scottish Government Energy Consents Unit (ECU) and are attached as part of the Background Papers. The Council agreed to hold a full public debate on the matter.
- PL-40-09-F (Shetland Islands Council 28 October 2009 – Min Ref 145-09) Update report on Application Ref: 2009/191/ECU (this application) following the applicant's decision to submit an addendum. The Council, noted the position at that time; agreed to forward the transcripts from the Council's public consultation meetings to the ECU; and postponed the meeting of the Council that was scheduled to debate the application to a later date to be decided (this meeting).
- ISD-07-10-F - (Shetland Islands Council 27 October 2010 – Min Ref 150-10) sought direction on what further public consultation the Council required for the Addendum to the original application. The Council decided not to hold further public meetings.

1.12 Following submission of the Council's response on the amended proposal, the ECU guidance indicates that it aims to assess the response it receives from the Council along with those received from other bodies and the public within 4 weeks and decide if further information from the applicant is needed. If additional information is needed this is sought from the applicant in the form of a further addendum to the application. There is no timescale for the developer to submit this, and the application would again be considered suspended pending its submission. Any further

Addendums and public consultation would be at the discretion of the ECU.

- 1.13 If any further addendum is submitted it would then be the subject of further consultation by the ECU, and it would be circulated to relevant stakeholders and further public consultation held as appropriate. All consultees, including the Council, would have only 28 days to respond unless an extension were to be granted. Thereafter the ECU envisages that it will take up to 4 weeks to assess the responses to the consultation on the addendum and decide if further information is needed.
- 1.14 If the Council objects and doesn't withdraw the objection or if the objection cannot be met by condition the Scottish Ministers must call a public inquiry. Even if the Council, doesn't object the Scottish Ministers have discretionary power to call a public inquiry as a result of the sustained objections from other statutory consultees such as SNH. It is said that it takes up to 3 months to refer an application to a public inquiry, and depending on the nature of the inquiry and reporting timescales this process can take between 6 and 18 months. After the public inquiry report is compiled and received by the Scottish Ministers it is said that they aim to move to a determination of the case within 2 further months.
- 1.15 The Planning Service has undertaken extensive consultations in addition to those undertaken by the ECU and Viking Energy Partnership when it was formulating its proposals; the proposal has also been extensively advertised in the press and has been the subject of 4 public meetings held by the Council as well as other publicity.
- 1.16 The Planning Service has received direct representations from 44 members of the public, many of them choosing to add to their original comments following submission of the Addendum.
- 1.17 The Planning Service has received responses from the bodies we consulted and has had sight of the responses sent directly to the ECU.
- 1.18 The views of the respondents and consultees are summarised below under "Consultations" and "Representations".
- 1.19 All s36 applications require Environmental Impact Assessment by virtue of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000, as amended (the EIA Regulations).

## **2. Risk Management**

- 2.1 There were no risks to the Council identified.

## **3. Statutory Development Plan Policies**

### **3.1 Shetland Structure Plan (2000) Policies**

GDS1 Sustainable Development

GDS4	General Development Policy - Natural and Built Environment
SPNE1	Design
SPNE2	Landscape and Design
SPNE3	Agricultural Land Quality
SPNE4	European Nature Conservation Sites
SPNE5	European Nature Conservation Sites
SPNE6	SSSIs
SPNE7	Nature Conservation
SPNE8	Biodiversity Action Planning
SPNE9	Protection and Enhancement of the Natural Environment
SPBE1	Built Heritage Resources – Scheduled Monuments, Archaeological Sites, Listed Buildings, Historic Gardens and Designed Landscapes
SPBE2	Archaeology
SPENG3	Renewable Energy
SPENG4	Energy Related Developments
SPIND1	Business and Industry
SPTP7	Car Parking
SPWD1	Marine and Freshwater Resources
SPWD2	Water and Drainage

### 3.2 **Shetland Local Plan (2004) Policies**

LPBE13	Design	LPNE10	Development and the Environment
LPNE14	Biodiversity		
LPNE15	Agricultural land		
LPBE13	Design		
LPWD10	Flooding		
LPWD11	Sustainable Urban Drainage (SuDS)		
LPENG 6	Energy Proposals		
LPENG 7	Control of Potential Nuisance from Energy Generators		
LP ENG 8	Energy Proposal Affecting Designated Environmental Sites		
LP ENG 11	Power Lines		
LPWD5	Water Catchment Areas		
LPWD11	Sustainable Drainage Systems		
LPWD12	Surface Water Drainage Standards		
LPTP11	Airports and Airfields		
LPTP14	Public Access and Rights of Way		

3.3 Additionally, the Council has adopted other planning policies that are not part of the Development Plan but material to the consideration of the applications, as follows:

### 3.4 **Interim Planning Policy (IPP) (2009) – Minerals**

LDP MIN1	Minerals Safeguarding
LDP MIN2	Proposals for Mineral and Aggregate Extraction
LDP MIN 3	Recycled and Secondary Materials
SPG MIN 1	Mineral Working to Satisfy Island Needs Minerals Safeguarding
SPG MIN 2	Proposals for Mineral and Aggregate Extraction

- SPG MIN 11 Borrow Pits
- SPG MIN 12 Incidental Mineral Extraction
- SPG MIN 15 Visual Intrusion
- SPG MIN 16 Environmental Pollution and Highway Safety
- SPG MIN 17 Conservation of the Natural and Built Heritage
- SPG MIN 19 Restoration and Aftercare
- SPG MIN 20 Restoration from Imported Materials

**3.5 Draft IPP Wind Farm Development agreed by planning board on 6 October 2010 (Min Ref: 62/10) – will be applicable to aerogeneration schemes in excess of 20MW – Not approved policy; see section 6 below**

LDP WED SP2 The Areas to be Afforded Significant Protection – the policy relates to on-shore wind energy development and aims to protect areas of national or international significance.

LDP WED SP3 All other areas – the policy relates to on-shore wind energy development and aims to encourage wind farm development of all scales providing it does not cause significant adverse environmental or amenity impacts.

**3.6 IPP Towards Sustainable Construction and better design in Shetland**

- LDP 1 General
- LDP 2 Layout and Design
- LDP 5 Historic Built Environment
- SPG 1 Layout and Design
- SPG 26 General Requirements for all New Developments

**4. Other Relevant Council Policies**

**4.1 Economic Development Policy Statement 2007-2011**

Policy 17 Continue the development of the Viking Energy community wind farm project.

Pledges Establishment of a fixed interconnector to the UK mainland by 2012.

Gain full planning permission for Viking Energy Viking Energy community wind farm project to be at construction stage by 2011.

**4.2 Shetland's Cultural Strategy**

Aim 2.3 Maintain, develop and promote the rich cultural and natural heritage, arts and crafts, and archaeology of Shetland.

Aim 2.4 Safeguard, promote and ensure access to the natural environment of Shetland and its outstanding landscape, flora and fauna.

- 4.3 Although the above policies have the most relevance, other policies may have other, less direct, relevance.

## 5. Statutory Advertisements

- 5.1 The Council has met the requirements to make the submitted documents publicly available following the applicants publicity of the proposals and has placed them on the planning register.

## 6. Representations

- 6.1 The Council has directly received representations from 44 individuals and bodies in support of, or against, the proposed development; here is a summary of those representations so that Members can be aware of the range and nature of issues raised therein. Some have written to the Council both in response to the original application and again following submission of the Addendum. These summaries should be used as a brief introduction to correspondents' actual letters, which are attached to this report.

- 6.2 7 letters of support for the proposal have been received; in summary, the points raised are as follows:

- Wind power is the best form of energy for the future.
- There will be no adverse effect on tourism.
- Construction of the wind farm will provide jobs.
- Good for Local Economy including diversification of economy and employment opportunities.
- The project is environmentally sound.
- Will not result in extensive peat destruction – or will not worsen existing situation/ condition of peat – or will improve the existing situation.
- Should not be peat destruction or peat slide risk if the project is properly managed.
- Shetland's landscape is already man made and/ or industrialised and despoiled with pylons, sheep overgrazing, aquaculture, agricultural buildings, major roads and commercial peat extraction.
- Many objections have arisen purely due to perceived financial uncertainty surrounding the proposal and the Shetland Charitable Trust's potential investment.
- Shetland should pay something back for the CO2 emitted and financial benefits it has enjoyed from the oil industry over the past 30 years.
- Will allow the development of other renewable technologies, such as wave power.
- Shetland has the best wind potential in the world and it should be used.
- There is no conflict of interest since Councillors will not grant consent and will not benefit directly.
- Small-scale community projects cannot provide sufficient power to deal with climate change, better to be fully involved with a national project that can make a real impact.

- Viking project will be seen as a good example for countries like India and China.
- Much information put in the public domain by objectors is deliberate misinformation and propaganda.

6.3 One of those expressing support for the proposals also expressed concerns and these are:

- Development too large for Shetland and connection charges should be reduced to enable the project to be a more appropriate scale.
- Insufficient details about quarries has been provided, location and EIA for each is required.
- Insufficient information about transportation and effect on local road system.
- Concerns about water abstraction and disruption of water table.
- Proper monitoring required during construction.
- No community benefit programme yet formulated.

6.4 Letters of objection from 37 individuals or bodies against the proposal have been received; in summary, the points raised are as follows:

#### 6.4.1 Planning Policy

- Proposal is contrary to Scottish Planning Policy in that many turbines are located closer than 2km from existing dwellings.
- Proposal is contrary to adopted Shetland Development Plan Policies (see section 2 above for policy titles) GDS1, GDS4, SPNE2, SPNE7, SPBE2, SPENG3, SPENG4, SPIND1, LPNE10, LPNE10, LPENG6.
- The Council's planning policy on wind farm location guidance is flawed or has been drawn up to facilitate Viking proposals.
- Many turbines are too close to houses and that this is contrary to Scottish Planning Policy - one respondent stated that 74 of the 127 are within 2km of properties.
- Concern that additional development or wind farm expansion within the approved area will follow, either by expansion or increased density or increased size of turbines.
- The proposal should not be considered as a single large wind farm but as 6 distinct groups.
- Production of energy from wind is intermittent and inefficient.
- Other forms of renewable energy should be developed and installed.
- Need to keep replacing existing turbines with larger ones on the same basis as the original project.

#### 6.4.2 Procedure

- A Public Inquiry should be held into the proposals.
- Violation of Article 8 of the European Court of Human Rights in respect of overall and specific impacts on individuals who would have no right to compensation for loss or respite from those impacts.

- Inadequate Public Consultation, either in formulating the proposals, during the consultation on the s36 application, or both
- The Council's economic development policy pledges support for the Viking wind farm and interconnector - therefore the Council cannot judge it without bias.
- There exists irreconcilable conflicts of interest for the Shetland Islands Councillors and Shetland Charitable Trustees such that they will be unable to fairly represent the views of their constituents; in some areas, some respondents have stated that they feel unrepresented.
- Inadequate public involvement in design of proposal.
- Inadequate graphic representation or detail of the proposals, close up or as a whole; the panoramas fail to convey how the wind farm will look from various vantage points.
- There should be a meaningful attempt to gauge public opinion, given that the developer said "if the community doesn't want it, they won't get it".

#### **6.4.3 Land Use/Infrastructure (inc quarries; roads; access)**

- Construction impacts - noise, dust, disruption, blasting, restrictions on access and general loss of amenity.
- Concern about the number, size and distribution of vehicular movements and construction traffic and their impact on existing transport and road systems.
- Concern about the environmental impact of the number, type and size of vehicular movements, e.g. noise, pollution, dust.
- Impact on local infrastructure, including local roads, bridges and junctions.

#### **6.4.4 Geology/ Soil**

- Destruction of large areas of peat during the course of development and the risk of peat slides both during and after, or as a consequence of, the development.
- Doubts have been expressed about the proposals for peat storage on the one hand and restoration of blanket bog on the other.
- Proposals for final state of quarries unrealistic and may be dangerous.
- Proposals for storage of several hundred thousands of cubic metres of waste peat missing.

#### **6.4.5 Water and Drainage**

- Pollution of watercourses by run off, leachate, displaced and eroded or liquid peat, silt and minerals - leading to compaction of the gravel bed, eutrophication (excessive nutrient levels), increased turbidity (cloudiness due to suspended solids), higher biological oxygen demand (leads to suffocation) or smothering of organisms, all adversely impacting the biodiversity of the watercourse resulting in negative change over time or sudden kills of life forms.

- Inadequate or ineffective control methods proposed to avoid damage to watercourses from peat destruction and disturbance; proposed methods of response to sudden events insufficiently robust.
- Concern about the quantities and sources of water that will be required for (e.g.) concrete production; worries that this will adversely affect the water table in the vicinity of concrete batching plants; and watercourses and lochans over the application site area as a whole.

#### **6.4.6 Biodiversity and Ecology**

- Adverse impacts upon designated natural sites and specially protected species.
- Adverse impacts upon the habitats of the development site.
- Adverse impacts upon wildlife in general, including plants, animals, birds, fish, invertebrates etc.
- Serious impact on blanket bog, which is a priority habitat on Annex 1 of the EC Habitats Directive and this habitat is therefore of international importance.
- Viking Energy has exaggerated the extent of erosion and the degraded nature of the blanket bog over much of the site – it should certainly not all be classed as bare peat – in some areas approximately 40% is active.
- Concerns expressed about the Habitat Management Plan.
- Thorough surveys of lower plants and terrestrial invertebrates need to be undertaken.
- The proposed Habitat Management Plan is unrealistic, may cause damage to biodiversity (and other aspects of heritage assets) and, since it is intended to direct projects outwith the s36 site application boundary, would not be subject to mitigation or checks on these activities.

#### **6.4.7 Marine Impacts**

- In addition to the issues of silt, run off and pollution that respondents have stated will affect freshwater watercourses, there has also been raised the potential impact on marine biodiversity and fish farms in the event of peat slip, bog burst or other major event where large quantities of material could enter the marine environment.

#### **6.4.8 Landscape/ Visual**

- Visual Impact of the proposal, both at a landscape scale and more intimately, disruption of views and change of the entire landscape character of affected areas; cumulative effect of so many aspects of the development and related proposals.
- Damage to the visual and other amenity of large areas of Shetland.
- The proposal is significantly too large for the Shetland landscape and beyond what the environment and natural systems can accommodate; because it is so large it further increases many of

the consequential impacts referred to and this means that it is contrary to the principles of sustainable development.

- Shetland's recognition as a valuable environment for landscape and biodiversity in global terms is particularly emphasised now that it is becoming recognised by the general public and this development will have an adverse impact on those qualities.
- Shetland's landscape is of international importance and deserves to be protected under the European Landscape Convention by virtue of its unspoilt character.
- The proposal has targeted some of Shetland's most remote and wild areas and some hills with the best vistas in Shetland; and it is suggested that the developer has targeted these with the reason that, because they are rarely visited they are of low value to the community. Some have gone on to say that such areas are valued precisely because they are so rarely visited, whilst others have stated that making such areas more accessible (by providing access roads) will devalue them by having an adverse impact on biodiversity due to increased human disturbance.
- The proposal is contrary to many of the recommendations contained in the landscape capacity study (LUC).
- The proposed wind farm site must not be considered a peripheral area of low value.
- Distraction to drivers.

#### **6.4.9 Heritage and Cultural Assets**

- Damage to archaeological and other built heritage sites and cultural assets.
- Importance of affected Scheduled Monuments is misstated and devalued to underplay scale of impact.
- Mitigation for archaeology is inadequate.
- Archaeological management plan requires further work.
- The assessment of cultural heritage is incomplete and concentrates on Scheduled Monuments and Listed Buildings, to the exclusion of other aspects.
- The developer has failed to acknowledge or react to the fact that many aspects of the development will remain in the landscape for millennia and that these aspects (e.g. tracks and concrete bases) will have a negative impact on culture and landscape.
- The proposed Heritage Strategy proposes excavation or partial excavation of archaeological sites, including some Scheduled Monuments, that would otherwise remain undamaged by the development – this, it is suggested, would be unlikely to receive Scheduled Monument Consent.
- Heritage Strategy and approach to Shetland's cultural assets has been developed without input from appropriate specialists, many of whom are based in Shetland.

#### **6.4.10 Noise and Vibration**

- Noise impacts/ noise pollution in the environment from the turbines once installed.

#### **6.4.11 Air Quality**

- Concerns raised about dust during construction.

#### **6.4.12 Carbon Balance**

- There remains significant concern about the development proposal's carbon balance calculations that present a payback figure derived using at least one flawed assumption that still includes no proper assessment of a worst case scenario.
- The carbon balance of the project should have been presented together with that of the interconnector proposal.

#### **6.4.13 Socio-economic Factors**

- The proposal will have a seriously adverse effect on Shetland's future tourism potential and will impair visitors' enjoyment of the isles and their amenity, beauty, natural environment and landscape, with negative financial consequences.
- The proposal will devalue property, both in specific areas and more generally throughout Shetland.
- The proposal will have a negative impact on the local economy.
- The socio economic consequences and cost to the community are too much; the financial risk is too great and out of proportion to what the local community should take on.
- There will be extensive restrictions upon public access over extended periods during construction.
- Creation of a large scale wind farm is an inappropriate use for resumed crofting lands and is contrary to the Crofting Acts.
- Health impacts from noise, strobe effect & shadow flicker, particularly for those living within 2km of turbines.
- Safety concerns have been raised in respect of proposal to fill worked quarries with extracted peat.

#### **6.4.14 Quality of Environmental Statement and Construction Methodology**

- The development includes inadequate restoration proposals.
- Many respondents felt that the ES submitted with the original application was incomplete or deficient and the applicant stated that it would address these issues; however, a number of respondents still feel that the ES is incomplete and deficient notwithstanding the submission of the Addendum.
- There is concern that micro-siting will be inadequate to protect interests/ features and that too many strategic issues are proposed to be left to environmental clerks of works.
- Concern that, if peat slip events or floating road subsidence occur, it will be far too late to do anything about them onsite, once they have become evident.
- Concern that inadequate construction control/ monitoring/ pollution prevention techniques are proposed.
- Floating roads are inappropriate and will cause peat failure.
- No baseline survey has been undertaken outwith the wind farm area for control purposes.

- There has been no attempt to consider the proposal together with the interconnector proposal; this represents splitting up a major project and European Law forbids “salami slicing” of major infrastructure projects in this way.
- Breeding bird data is still a major weakness in the Environmental Statement.
- Bird mortality and collision risk assessments and data are inadequate.
- Lower plant (bryophyte) and terrestrial invertebrates data is still inadequate.
- Quality and extent of blanket bog has been underestimated and the ES and Addendum are contradictory.
- ES only considers impact upon cultural heritage from the turbines and omits full consideration of the impact of the other aspects of the development including construction of exploratory quarries, production quarries, roads, substations, and turbine bases.
- Significant cultural sites lie in the development zone but have not been properly assessed. These include areas of current research, including millstone quarrying (Weisdale and Delting), transhumance (Nesting), lookouts (Nesting) and leprosy (Lunnasting). Given that such research is ongoing, and unpublished, the loss of evidence is likely to be significant.
- The ES Addendum overstates the benefits of mitigation arising from the reconfiguration since the original proposal.

## 7. Report

- 7.1 This is an application for consent under s36 of The Electricity Act 1989, The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000. The Council has been consulted on the above proposal and is expected to provide its opinion as planning authority, taking account of all relevant Council policies and the views of the community.
- 7.2 This report considers the proposal against the Council’s adopted planning policy and also refers to other Council policies that are relevant.
- 7.3 The other relevant Council policies are listed at section 4 of this report and consideration of these factors will have a bearing on the opinion that the Council agrees upon.
- 7.4 In considering the application this report follows the grouping of related matters already used to provide a structure for the consultation responses and representations that we received. This is to provide a degree of consistency across the responses and this consideration of the development proposals.

### 7.4.1 Planning Policy Context

A7 Renewable Energy and Planning Policy Context sets out the national and local policy context of the Viking Wind Farm Addendum. The chapter addresses the National Policy context adequately but the information within the chapter, especially with regards to the local policy context, is factually inaccurate and contains a number of

errors regarding the status of various local planning policy documents, especially emerging planning policies.

Currently the Shetland Islands Council has four relevant types of planning policy document with which to assess the Viking Energy Application:

- 1) The statutory Development Plan has the greatest weight and comprises the Shetland Structure Plan 2000 and Shetland Local Plan 2004. The Development Plan has been fully consulted on and subject to Scottish Ministers Approval/ Public Enquiry prior to adoption.
- 2) Adopted Interim Planning Policy documents are not part of Statutory Plan (because they were written after the statutory plan was adopted). However, they have been through public and statutory consultation, have been subject to Strategic Environmental Assessment and have been adopted by Shetland Islands Council. They represent the latest statement of Planning Policy on their specific subject matter and are to be considered to be of only slightly lesser weight than the Development Plan, on account of having not been reviewed by a Reporter or Scottish Ministers.

It is the intention of the Shetland Islands Council to adopt finalised Interim Planning Policy documents as Supplementary Guidance within the meaning of the 2006 Planning Act (Scotland) at the same time as the new Local Development Plan.

- 3) Draft Interim Planning Policy documents are as above. They have been developed with the assistance of statutory consultees and have been progressed to the consultation stage. They are a material consideration in the assessment of planning applications, but should not be afforded the same weight as adopted Interim Planning Policy.
- 4) The Main Issues Report (MIR) 2010. This is the first formal document that forms part of the new Local Development Plan. It does not contain any finalised Planning Policies.

Shetland Islands Council also publishes from time to time guidance documents (SPG's or Planning Advice Notes) to assist applicants in improving applications for particular types of development. These are relevant for applicable planning applications, but often have not been through a public consultation process and therefore should be accorded less weight than the Development Plan, Interim Planning Policy or Draft Interim Planning Policy.

The applicant's submission (A7) fails to address the differences between these documents and does not correctly address key policies within them.

The Planning Service report makes no attempt to quantify the total reduction in numbers of individual turbines proposed by different

bodies to achieve different types of mitigation or compare whether any of the same turbines might have been so suggested.

The Planning Service report makes no attempt to assess any of the items that the applicant has suggested as offsets to the overall negative impact on sustainability (e.g. Neolithic Heart of Shetland Heritage Strategy or the Habitat Management Plan).

In addition to the above-mentioned policies Table A7.1, Structure Plans Policy Additions and Amendments, does not address policies SPG MIN 11 Borrow Pits and SPG MIN 12 Incidental Mineral extraction, which includes the extraction of peat.

- SPG MIN 11 states that borrow pits will be treated the same way as any other mineral extraction scheme, therefore they must be justified in terms of being the most suitable source of material to meet demand and that appropriate environmental safeguards covering both working and reclamation are included. Support for obtaining materials by such means is under the policy's terms subject to (amongst other matters) the applicant being prepared to enter into a s. 75 Agreement to ensure that the site is used solely in conjunction with the specific construction scheme and to ensure that restoration is completed satisfactorily and with an agreed timescale.
- SPG MIN 12 Incidental Mineral Extraction; states that planning permission for the extraction of minerals, including peat, as a necessary element of other development proposals on the same site will be granted providing that: there are no unacceptable environmental or other impacts; there are adequate interim reclamation measures; there are proposals for re-use of excavated material; and the mineral extraction is of a limited nature and short duration.

Furthermore LDP 26 as described within Table A7.1 should read SPG 26 and the second column should read Local Development Plan (LDP) not IPP.

The discussion referring to the Main Issues Report (MIR) does not make it clear that the document is not a policy document, but a discussion document. The draft Vision stated within the MIR and referenced within the Chapter details the aspirations for all development in Shetland, not just wind farm developments, in isolation, (Para. A7.4.1).

In summarising the assessment of the Viking Addendum Volume 2 Chapter A7, there are some inconsistencies regarding the understanding of the local planning policy context, and although the chapter does appear to address National Policies adequately, it should be noted that PAN 45 Renewable Technologies is currently under review and a draft document was due to be published in autumn 2010 by the Scottish Government.

The Draft Interim Planning Policy (IPP) "Wind Farm Development" is the Council's current statement of draft policy in respect of onshore

wind farms of 20MW or above and offshore wind energy development up to 1MW.

A number of errors and omissions have also been stated within chapter A7 of the applicant's submission with regard to this IPP. The Planning Board, on 6 October 2010 agreed that the Draft IPP Wind Farm Development (not SPG as detailed within paragraph A7.5) should go out for public consultation (Min Ref 62/10). Therefore, the IPP has a certain degree of material consideration afforded to it, as implied by the applicants in their statement, even though the document is not yet in its adoptive state.

The IPP directly addresses the requirement of Scottish Planning Policy (SPP) paragraph 189 that states, "Planning Authorities should set out in the development plan a spatial framework for onshore wind farms of over 20 megawatts generating capacity"

Although this Interim Planning Policy is not itself part of the statutory Plan (Shetland Structure Plan 2000 and Shetland Local Plan 2004) it responds to national objectives contained within the following:

- SPP Scottish Planning Policy (2010)
- PAN45 Renewable Energy Technologies (2002) Annex 2 – Spatial Frameworks & Supplementary Guidance for Wind Farms (2008)
- PAN84 Reducing Carbon Emissions in New Development (2008)
- NPF2 National Planning Framework for Scotland 2 (2008)

All of the above documents have been published since the adoption of the current statutory Development Plan. Three policies within the Draft IPP are most relevant to this application:

- LDP WED SP2 Areas to be Afforded Significant Protection – the policy relates to on-shore wind energy development and aims to protect areas of national or international significance.
- LDP WED SP3 All other areas – the policy relates to on-shore wind energy development and aims to encourage wind farm development of all scales providing it does not cause significant adverse environmental or amenity impacts. Through accompanying spatial maps attached to the policy it directs developers and the community to the most appropriate locations for wind farm development.
- LDP WED DM1 Proposals for on shore wind energy development and any associated infrastructure will be assessed against the Development Management Criteria in Appendix 1, any relevant policy in the current development plan, and any other material planning consideration.

The Development Management Criteria cover the following 10 topic areas:

- Biodiversity
- Geodiversity
- Landscape and Visual Impact
- Historic and Archaeological Environment

- Impact on Water Resources
- Impact on Quality of Life and Amenity
- Availability of Grid Connection
- Peat and Soil disturbance
- Waste
- Aviation

Compliance of the Viking Energy Proposal with the Draft Interim Planning Policy (IPP) on Wind Farm Development

**Area of Search** - The main aim of the Draft Interim Planning Policy is to establish areas of Shetland that require significant protection when considering wind farm applications, areas with potential constraints and areas of search where appropriate proposals are likely to be supported.

The key policies in this respect are as follows:

LDP WED SP2  
LDP WED SP3

Please see enclosed Map of turbine locations plotted against the broad area of search map. (Map 4 of the IPP)

When the 2010 proposed turbines are considered in relation to the broad area of search methodology, 24 turbines lie in the Dales Lees/ Delting area of Significant Constraint. The constraint is caused by Scatsta airport height restrictions, but the area is considered a low sensitivity landscape. All other turbines are in the broad area of search or in “areas not otherwise marked”.

The IPP states at (2.21) that “it is unlikely that proposals for large scale wind energy development and its associated infrastructure will be able to satisfy SPP or the Development Criteria”. However it does not rule out that the applicant may overcome the constraints.

The potential effects of the Viking Energy Proposal on Scatsta airport are considered elsewhere in the Planning Service response.

Therefore the applicants must meet policy LDP WED DM1 for all turbine locations and must satisfactorily overcome the Scatsta Airport height restrictions for some turbines to remain within the requirements of policy LDP WED SP3.

The broad area of search methodology is outlined in Appendix 2 of the IPP. One of the key components in the creation of the broad area of search is the Landscape Sensitivity and Capacity Study for Wind Farm Development on the Shetland Islands (2009), prepared for the Council by Land Use Consultants.

An analysis of the Land Use Consultants study results with the proposed development by Viking Energy is considered in the Landscape Design Principles and mitigation section of this report.

The Landscape Sensitivity and Capacity Study for Wind Farm Development on the Shetland Islands is considered a guidance tool for assisting developers and planners in the submission and assessment of Wind Farm Applications. The study is a “background paper” to this Draft IPP. This means that the Planning Service used the study results in its preparation of the Draft Interim Planning Policy and that it should be read in conjunction with the Interim Planning Policy.

The Landscape Sensitivity and Capacity Study for Wind Farm Development is a publicly available document. It was first published on the Council website when the Planning Board noted the Land Use Consultants report on the 22 April 2009 (Min ref:27/09). It continued to be available and was also released publicly as part of the consultation on the Draft IPP on another part of the Council’s website. (Min Ref 62/10). It continues to be available in both places as of December 2010.

**The requirements of draft policy LDP WED DM1:** The Planning Service response to the Viking Energy Proposal has a number of detailed chapters that address the issues raised in the Development Management Criteria Policy LDP WED DM1.

The criteria and wording in the IPP Development Management Criteria were derived from existing Development Plan Policies although expanded on.

Without reiterating these criteria; the applicants have supplied information on all the required topics in LDP WED DM1. However there is significant variation in how relevant and comprehensive the information provided or gleaned by the applicants is, and this has been assessed in the other chapters of this report.

Notwithstanding, the Planning Service believes that the applicants have not fully addressed the local Planning Policy context for wind energy development in section A7 of the Addendum, though National Policy for Wind Energy Development is adequately addressed.

The majority of the proposed wind farm development falls into the Draft Interim Planning Policy’s broad area of search, but 24 turbines fall into an area of Significant Constraint. Under the emerging Policy all turbines would be subject to Policy LDP WED DM1 and must overcome this Constraint, which is related to aviation.

The applicants have supplied information on all of the topics required by the Development Management Criteria listed in the Draft IPP (LDP WED DM1) and the relevance and comprehensiveness of this evidence is assessed in the remainder of this part of this report.

#### **7.4.2 Land Use/Infrastructure (inc quarries; roads; access)**

In its latest response, SEPA has said that even if best practice is followed and mitigation employed the proposal of this scale is likely to have a negative impact on the environment. SEPA has also stated that it has only withdrawn its objection on the basis of its

recommended conditions; if these are not applied, its objection will stand.

The Council should note that it would be up to the Planning Service to monitor and ultimately enforce conditions attached to any consent granted by the Scottish Ministers.

### Roads

Almost no detail has been provided regarding the proposed road improvements, or the controls and mitigation that is proposed. Consents will be required from the Roads Authority once detailed design has been carried out, but environmental impacts need to be considered now, and there is not enough information to make any valid judgement.

There would appear to be the need for substantial works to link the A970 and Kergord with a road suitable for transporting the very heavy loads required for the transformers at the Inter-Connector and a new road of this type would normally require a full EIA of its own to support planning applications and it is likely that other road improvements would also require planning permission.

The Addendum provides no additional information on the proposed changes to the public roads, other than to say they will be “minimal”, which does not seem likely to be the case.

The Addendum states that structures will be designed according to the Design Manual for Roads and Bridges (DMRB) but no other details have been confirmed. The following requirements should be minimum conditions for public roads:

- Structural design to DMRB requirements as a minimum.
- Sized to carry 1 in 200 year flows.
- Carriageway width equal to road width + 0.5m, or 3.6m minimum.
- 2.0m kerbed footway/verge on both sides.
- Parapets to DMRB requirements.
- Maintenance period to run for 1 year after VE project constructions works have been completed.

### Turbine foundations

Some schematics of the foundation layout are given at Figure 4.3. There is widespread concern about the amount of peat being displaced from these excavations and the resulting carbon loss. It is proposed to create concrete batching plants on site. The Addendum introduces a claimed reduction in amount of concrete required and peat displaced, though there is the potential for uncertainty about the amount of peat excavated, reused and for waste disposal.

### Track layouts

104 km of developed track is proposed, 13km less than the original proposal. Appendix 4.1 gives the Track Layout Design Strategy. The site area has varying depths of peat and as a result differing

designs of track will be installed, single- and double-width, floating and cut and fill.

It is unlikely that the track distance has been walked over and assessed for peat depth in detail. Concerns exist that the amount of excavation and fill required may have been underestimated, given the quoted differences in track widths, therefore giving rise to extra borrow pits over and above the amount already required and potentially more carbon loss. It should be noted that there is a considerable difference in the possible amounts of peat displaced in the Addendum – see Page 11 of 23 in Appendix A14.4.

The type of stream crossings used is important. SEPA will comment on the appropriateness of bridges or culverts in the various locations under their own consenting processes.

SNH comments about the width of the tracks are well observed and the advice given should be taken on board. SNH advises that the applicant should review the need for double width tracks and, if they are deemed necessary, that consideration be given to narrowing them post construction. This has been reviewed and they have reduced the extent of double width tracks.

### Borrow Pits

Local Plan Policy LP MIN 7 describes borrow pits as limited to 35,000 tons. Only one of the borrow pits proposed would come into this category. The 13 areas have been indicated and the type of rock shown. These are substantial quarries within any context. We have not undertaken a formal screening exercise but it is likely that a number of them would require an EIA in their own right.

Although the number of borrow pits has been reduced from that which was originally proposed, the amount of extraction indicated in the Addendum has not been reduced significantly; a reduction of 37,500 cubic metres from a previous total of 1,507,500 to 1,470,000 cubic metres has been indicated.

Restoration profiles for each borrow pit proposed are shown though it is clear that a significant change in the landscapes of the areas concerned will result as a consequence of the extractive operations. All will have rear walls/faces varying in height from 8 metres to 30 metres. Concern has been expressed about the safety aspects of creating large areas of deep, possibly liquid, peat in this way. Peat depths were to be a maximum of 2 metres. Any reinstated area will require positive management, and this might need to include fencing (possibly temporary) to prevent access whilst the area concerned stabilises and rehabilitation takes place. The degree of work to prevent access and so manage possible hazard to human and livestock will depend on location of pit and proximity to other areas already subject of access

This type reinstatement will leave a permanent visual impact. Whether it is considered that an exposed rock face, not common to the Shetland landscape, is acceptable in 13 locations throughout the

north of the mainland, is one of individual judgement, though there will undoubtedly be significant landscape impact

The ES also states that slope stability will require investigation at all locations. Accordingly it will be appropriate for the terms of any approval to require peat management plans to be submitted should be required by condition to try to avoid slide and potential pollution.

#### Peat Extraction Volume and re-use

The amount of peat extracted links back to track width and may vary from that quoted should the maximum widths be applied. While the Addendum indicates that the size of the road is to be reduced to 6 and 10 metres respectively there is still an environmental impact with regard to the 2 metre construction strip (1 metre either side of the track).

Also, although floating roads have been advocated the extent of their use is not clear in the submission. The Addendum indicates that peat probing at 50 metre intervals using GPS has been undertaken and that best practice in relation to the use of floating roads on peat will be used. The Planning Service has noted that best practice is outlined in 'Floating Roads on Peat' document (SNH & FCE, 2010).

Excavated, and otherwise waste peat is to be reused in borrow pit re-instatement. The ES refers to peat re-use at Braes of Doune wind farm and unstable material now there. It goes on to say that this ongoing risk will need to be addressed at the end of the operational phase of the wind farm. This is unacceptable and an appropriate strategy should be developed prior to the development commencing. Without an appropriate strategy it is impossible to assess the potential impacts.

Restoration of only the floor to a borrow pit will leave an exposed rock face. A14.4, 3.3 xii States that a fill of up to 2m of peat is considered to be the maximum practical and achievable level without causing risk to the environment or human health. We would not want to see additional fill material brought in from offsite or from developments other than form a part of the application for the wind farm as is under consideration, and a s. 75 Agreement as referred to at paragraph 7.10 above would serve to ensure this. The contractor will be required to agree treatment options with SEPA during the re-instatement period by means of a "Site Working Plan" (if a Mobile Plant License is to be used) independently of any requirements attached to any consent the Scottish Ministers might grant relating to wider interests than those within SEPA's remit. Plans such this will ensure satisfactory re-instatement of the individual Borrow Pit floor.

#### **7.4.3 Geology and Soil**

We have reviewed the major changes in the Addendum that would affect soil and geology and considered SEPA's comments and those submitted by Shetland Amenity Trust (SAT) and other responses.

SNH did not object to the original submission in terms of impacts on peat, habitats and soil and water; however they did advise the use of conditions to mitigate any potential problems – this remains the case.

The submission of the Addendum has seen large changes in the overall Viking Wind farm (VW) site; changes that affect soil and geology are mainly down to the reduction of turbine bases (23 less), reduction in the number of the primary areas for borrow pits to 13 and all 8 secondary areas have been deleted. The applicant states that less aggregate would be required for the revised 2010 design for the wind farm, and it now has a greater knowledge of site conditions and likely sources of stone. The number of potential borrow pits has therefore been reduced to 13, of which 12 are likely to be actually opened. Borrow pits would be restored after use with peat sourced from excavations for track construction and turbine foundations.

The revision of the proposal will undoubtedly reduce the impact in relation to soil and geological disturbance - see deleted features maps Figure A4.1.1b for north (Delting and Collafirth) and Figure A4.2.1b to the south (Nesting and Kergord) and also the reduction of construction compound areas. In the proposals the subject of the 2010 Addendum, no turbines or other infrastructure are to be constructed in the Collafirth quadrant. Therefore the construction compound originally proposed for Easter Scord has been deleted from the construction plan, leaving 7 temporary construction compounds instead of the 8 originally planned.

The reduction in track length and turbine numbers also reduces the amount of on-site buried cabling required, from about 118 km to about 104 km. The applicants state that the area that may be disturbed during construction activities is now proposed to be about 232 hectares. After construction is complete, the area that would be permanently affected amounts to about 104 hectares.

Reducing the size of tracks servicing the turbines is the other big change there has been to the proposals in relation to soil and geological disturbance. The proposed track network has been reduced in length by approximately 14 km, from about 118 km to about 104 km. Double tracks have been reduced from 12 metres to 10 metres and double tracks will be reinstated after the construction phase to single tracks. This should be conditioned under any approval given by the Scottish Ministers as micro-siting around the turbine tracks and base is essential in limiting unnecessary damage to peat and geological features. We remain unclear about how effective the reduction in the track will be after construction and the remaining damage (when materials are taken away). It seems likely that surface damage would be caused by plant removing the floating road and it is unclear how severe this will be or how long it will take for the disturbance to the land to be repaired. However, this could be looked at as an acceptable compromise – rather than their being a permanent gravel road running up the hill.

Following consultation with the Council's Roads Service and nearby residents the operational access at Newing, and associated 789 m of

track, has been deleted to remove the risk of construction traffic disturbance to local residents at Newing and Catfirth on the B9075.

To give an idea regarding areas to be excavated, the applicants state that concrete volumes required for the revised development have been estimated to be 62,897m<sup>3</sup>, primarily to form turbine foundations.

Micrositing is essential; SEPA give their approval for buffer zones of 50 metres with this size increasing to 100 metres with the approval of SNH and SEPA, who have requested a condition to that effect. However, some sensitive sites have been reduced further to 10 metres and 20 metres. This should be done via consultation with SEPA, SNH and other statutory and non-statutory experts.

SEPA request careful Micrositing at locations K64, K66 and K72 due to deep peat in areas of headwaters. This should be conditioned by the Scottish Ministers under any consent to stop erosion and possible burn pollution. The Site Environmental Management Plan (SEMP) should be completed with that in mind and should again be conditioned, stating that no works (re-siting) outwith micrositing parameters set by conditions should be allowed; this would go a long way to control and contain increased soil and geological disturbances that have not been assessed within the ES, the alternative being that in exercise of the precautionary principle consent ought to be refused.

SEPA request minimum buffer zones between all infrastructure and roads with exceptions – these exceptions should be granted via consultation between SEPA, SNH, SIC etc. Again this will help control any unnecessary damage to peat and geological features during construction phase.

The Planning Service agrees with SEPA's recommendation that it is essential that should the application be approved, suitably qualified specialists in fields such as geotechnical engineering, hydrology etc with responsibilities for environmental management should be employed with authority to implement actions such as stop notices during the construction, operational and reinstatement phases, in addition to those that the relevant regulatory bodies have rights to exercise statutorily. This could possibly be done via the SEMP and through conditions – the latter being essential in keeping works to the approved EMP – see SEPA's comments regarding environmental auditing in paragraph 4.1.5. of its letter dated 1 November 2010.

Also, site specific statements outlining track construction should be submitted, that include track installation in disturbed areas, to confirm precisely this aspect of the proposal, including extent. This was outlined by SEPA and would be a worthwhile condition for the Scottish Ministers to attach to further reduce any possible creep from construction works and minimise further soil and geological disturbance. If this is not possible then any deviation should then need to be agreed in writing by the Planning Authority.

The Addendum mentions an Environmental Advisory Group; this would be a very useful group to form, as this would allow the Planning Service to monitor construction works, monitor operational phases and decommissioning phases, via appropriately qualified experts. However, these matters should also all be properly conditioned.

SEPA is now content with the peat disposal calculations insofar as it can assess them from the information provided.

In terms of peat storage, this should in the Planning Service's view be looked at as a requirement of a condition. The applicants intend to store the removed peat and use it for restoration purposes – SEPA states that this should be in a suitable bunded site with adequate drainage and monitoring so the peat is in suitable condition to be used in 25 years time. However, many respondents have pointed out the difficulty of ensuring that peat remains in a condition such that it can be used for restoration over such a period. SEPA acknowledge the difficulty but their main point is that storage of this material will be counted as long term storage of waste material and, as such, will require a PPC permit. SAT point out that the applicants have not allowed for the loss of any carbon at all in these processes in their carbon balance calculations. According to one correspondent, the applicants make no suggestions as to how sediment run-off will be dealt with or how the peat can be stopped from drying out. Peat, once disturbed, can become liquid in nature, as the sub-surface layers appear to contain about 97% water.

The Planning Service points out that the application does not contain any proposal for a temporary bunded storage site for peat over the life of the project, accordingly no such site has been identified. However, the applicant has stated that it would intend to recover peat for reinstatement purposes from unspecified borrow pits.

SEPA, SAT and other respondents mention the potential for peat slides; conditions should be looked at within the management plan for peat slide prevention bearing in mind peat slide events are a relatively regular occurrence in Shetland. The composition of peat, and how it responds to disturbance, e.g. from modifications to drainage and pressure from vehicles on floating roads, will be important considerations in this.

SEPA has commented that new borrow pits should not be opened until their full need is demonstrated, allowing for a phased development and that this should be the subject of a condition. This would be essential in terms of minimising unnecessary geological and associated environmental disturbance through the opening of further borrow pits. Furthermore, reinstatement of these borrow pits, should be done via a site specific reinstatement plan, that shows the extent of the existing pit, the proposed finished levels and where the infill materials have been sourced from, rather than a representative plan for all such reinstatements. This could be conditioned by the Scottish Ministers to ensure that the borrow pits are not over used beyond their approved area, and that the reinstatement works are to the satisfaction of the Planning Authority.

Concerns have been raised about the potential for hydrological damage beyond the 50-metre buffer zone and the effect the installation of roads (tracks) will have on the peat. The applicants state that following further input from expert academic consultants, their initial assessment was substantially valid, though based on unnecessarily pessimistic parameters. For example, they say it is their opinion that peat is unlikely to dry out as much as was assumed in the 2009 assessment; and the 2009 assessment failed to take sufficiently into account the fact that the peat is currently in very poor condition, and getting steadily worse. Some respondents disagreed with this.

Issues have been raised regarding the adequacy of a 50-metre buffer zone and the possible hydrological damage beyond this. SAT has stated that some peatland scientists argue that hydrological changes can occur up to 250 metres away from infrastructure. The Council could it is considered suggest that the ECU requires further justification on this subject, as far as it affects the proposed Viking site.

Floating roads and how they can lead to settlement and drying out of peat, due to water displacement is described by SNH and the Forestry Commission in their document *Floating Roads on Peat* (August 2010). However, the applicants in noting this publication have stated: "The recent publication of the 'Floating Roads on Peat' document (SNH & FCE, 2010) has been reviewed and it is considered that the iterative design approach used to ES submission stage during this project is represented within this new best practice publication. The approaches advocated in sections related to route identification and pre-construction considerations are closely aligned with practice carried out to date with regard to peat stability. A number of the early site investigation works have also been carried out on site and using similar principles to those suggested e.g. desk study, walkover to identify particular local peat characteristics (hagged terrain for example), peat probing at 50m intervals along track route (using GPS for accuracy) and on site shear vane testing. In addition, further examples of best practice documented to be undertaken on this project during construction include monitoring of weather conditions, documented 'stop conditions', use of specific sustainable drainage techniques, adequate watercourse crossing design and cable trench reinstatement. All of these are now advocated by the SNH & FCE publication. Indeed, the Viking project Stream Crossing Guidelines are advocated as best practice within the guidance document" (VE 2010).

The critical point, with regard to such road construction, is that the recommended best practice is appropriately and consistently applied and practices rigorously monitored throughout the entire process, from planning right through to condition monitoring over their lifetime.

There is disagreement about how the condition of the stored peat will be maintained over the period that it is stored. The Planning Service reflect these comments and suggest that further assessment is appropriate because greater certainty about the total area and

locations of active blanket bog should be established, not least in relation to competent authorities' obligations in respect of priority habitat.

SAT stated in its comments in response to the original proposal, that a thorough appraisal of lower plants needs to be undertaken by a recognized expert bryologist, "as a nationally scarce peat forming species of sphagnum has recently been found within the site, while the surveys undertaken by VE's consultants (which covered a small part of the site) claim to have located 3 species new to Shetland." (SAT 2010). There doesn't seem to be mention in the Addendum that a new survey was undertaken. SAT state that no confirmation of the 3 new species has been received. SAT commissioned an independent survey over some areas of the VE proposed site by a national expert who recommended that any wind farm development should take full account of the bryological interest, and in particular avoid disturbance of the good quality blanket bog between North Mid Field and Maa Water, and the base-rich flushes near the confluence of the Burn of Lunklet and the Burn of Lambawater.

This highlights the differences in 'expert' surveys of the site in relation to the quality of blanket bog – bearing in mind that blanket bog (which occurs in significant areas within the wind farm boundary) is listed as a priority habitat on Annex 1 of the EC Habitats Directive and is of international importance. The applicant states in the Addendum that most of the blanket bog is in a declining, or poor, condition (Non Technical Summary). That substantial areas are in such condition is not in dispute, but the extent is not agreed and conclusions drawn from the overall condition vary notably.

It seems feasible that through careful mitigation and conditioning via the SEMP and HMP, minimising further damage to soils and geological features is attainable, though pollution seems certainly likely to occur. Controlling conditions could ensure that no development falls outside the assessed boundaries of the ES and turbine development site. Effective monitoring of the construction phase, operational phase and decommissioning phases will be vital, although it remains to be identified what resources will be required to achieve this.

In terms of reinstatement all tracks, cable trenches and other structures will be left in situ. "To remove them would cause unacceptable ground disturbance and risk of pollution and siltation" (VE 2010). We believe this should be assessed on a site by site basis as mentioned in chapter A14 in the Addendum; with advice from relevant experts, in consultation with SNH, SEPA and other statutory and environmental bodies that have expertise, taking account of knowledge and following best practice existing at that time.

#### **7.4.4 Water and Drainage**

It is the Planning Service's view that general construction details should be approved before construction works begin, with site-specific changes agreed on site as matters arise as is permissible

under the regulatory regime under which control would be exercised. Inspection and maintenance of the drainage features will be the main factor in ensuring they operate as intended, and a formal inspection/maintenance plan should be provided for the construction period and for the longer-term operational life of the wind farm.

The Addendum states that the contractor will carry out all design work associated with drainage, including all design decisions, method statements, SEPA licensing and necessary environmental control measures. This would imply assessment of flood risk, including from peat slides, and the process for checking suitable design and construction standards remains unclear.

It is unclear whether the return periods used and flood risks have been assessed; both 1 in 200 and 1 in 100 year return periods are mentioned. Roads Service consider that in the first instance all drainage structures should be designed to carry 1 in 200 year flows without damage, surcharging being permitted where the design allows this safely.

If a reduced design capacity of 1 in 100 years is to be used the applicant should be required to show that this will not present a risk of flooding or structural damage, either at the site of the crossing, or downstream.

The Roads Service is not clear what role, if any, the Council would have in checking these proposals, or how the procedures would operate. Given the large number of structures involved the scheduling would need to be considered well in advance.

Mitigation measures to prevent pollution and/or sediment transfer in watercourses and ditches after construction by means of filtration/settlement of water entering are proposed.

### Bridge Crossings

It is not possible to confirm from the submitted information that suitable locations are to be used for bridge crossings. Detailed information will be provided to SEPA for the CAR licence prior to construction, and this should provide a sufficient enough check, but it would be preferable for Council to see the detailed design at this time also so that it can be satisfied that regard is had to all interests.

If the applicant's proposed design process/ mitigation is followed there should be no significant changes to watercourse flows.

### Culverts

No details of culverts have been provided within the submission. Changes to existing hydrology will be more complicated than just considering entire catchments, and careful design accounting for specific local conditions will be needed.

The Addendum states that decisions will be made on site to ensure that drainage is appropriate. This is an acceptable approach in

principle, but Roads Service feels that more guidance would be needed to outline the options available or suitable. An appropriate system would need to be put in place for checking the suitability of the drainage chosen and making any changes required. The Planning Service has not seen any mention of a maintenance regime either during the construction phase, or more importantly during the operational phase.

### Change of Drainage Patterns

Development can give rise to localised effects, and bearing in mind the possible longer term consequences of these the question arises as to what can be done that is measurable to ensure small-scale surface and ground water flows are maintained.

In theory the maintenance of flows can largely be addressed by good design decisions being made on site following the system advocated above. This does however depend on the quality of the process and the willingness to spend time and money on drainage that may not be the optimal engineering solution. As above, how the system will be controlled and monitored may be a big issue.

### Flood Risk

Flood risk should consider specific flood risks of all affected catchments areas to the sea during 1 in 200 year flows. SEPA flood risk maps are a useful starting point but do not necessarily give good information on the local details that will dominate assessment of flood risk of individual houses.

Properties that are at risk of flooding should be identified including risks from peat slides causing damming or diversion of water flows, and any required mitigation measure presented for consideration.

### Public Use of Roads/ Bridges

The Planning Service has not seen any direct intention stated for promoting public use of the access tracks. If full vehicular access were to be provided, this would have an impact in its own right and would need appropriate construction standards. If full access is not to be provided then lower standards would be required and some measure to restrict access be put in place. The standards used would have implications on both design and maintenance/ inspection regimes.

### Water treatment of run off before entering watercourses (from excavation, e.g. for turbine bases, from borrow pits and from concrete works)

Silt fences, mats, settling sumps and settlement systems are proposed to remove silt and sediment from surface water before it enters any watercourses, but no design details, sizing or maintenance regimes have been discussed and it is these details that will determine the success of the proposals. The Addendum

only includes some schematic drawings of typical drainage layouts, but no site-specific information.

### Foul Water from Welfare Facilities

The Addendum clarifies the foul drainage proposals and, since, CAR licences will be required from SEPA, the Planning Service again feels it is best placed to address this area during that process.

### Mitigation Pollution and Flooding

SEPA has stated that it “does not agree that the residual impact of pollution from the construction phase of the development would be ‘minor’ on the basis suggested in Section 14.6.6 (b) of the ES. Given the scale of the development and the nature of the terrain we consider that it is unrealistic to expect that the mitigation measures will result in sufficient treatment of all pollutants to the extent that pollution is unlikely. Instead we would contend that pollution remains a likely outcome from such a large scale construction project in a wet environment. The authority should take into consideration this residual impact when determining this application.”

### Decommissioning

The proposals mention that tracks and drainage may be removed or left in place depending on the wishes of the landowner. However there will be a need to consider the larger parts of the wind farm area as a whole if it is to be ensured that what is left and what is removed will continue to work adequately without presenting flood or erosion risks and that the continued operation of parts of the construction left behind does not depend on levels of inspection and maintenance that are beyond the capacity of the landowner.

### **7.4.5 Ecology**

Overall the Addendum takes the approach that, by reducing the number of turbines, length of track, reducing width of track remaining after construction phase and reducing the number of borrow pits, the environmental impact is reduced proportionately and the issues identified in the original ES by consultees will no longer result in any impact. This is in the Planning Service’s opinion an overly simplistic approach to EIA, and in some areas means that further assessment is based more on subjective rather than scientific or objective factors.

The Addendum also emphasises that the original 2009 ES has been re-assessed in the light of SNH guidelines issued in 2006.

The number of borrow pits that will be developed to obtain materials has not been reduced. In the 2009 ES a potential 23 pits were identified but the intention was only ever to utilise 12 or 13 of these, and the 2010 Addendum simply identifies which 12 or 13 are to be used.

One issue that has not been assessed in either the 2009 ES or the 2010 Addendum is the impact of blasting and drilling (associated with the borrow pits) on wildlife, in particular breeding birds.

Assessment was undertaken in respect of human receptors (dwellings). It is assumed that blasting and excavation of bedrock for tracks, etc will be undertaken on an “as required” basis rather than in a single operation and is therefore likely to happen on a year round basis. As the applicant’s propose working mainly in the summer months to avoid bad weather and low light levels there is a high potential for disturbance of birds and this will have a high significance during the breeding season. For some species, e.g. red-throated divers, the consequences of being scared off eggs at critical times will result in impacts on overall population dynamics. Even without consideration of blasting impacts, the Addendum indicates that there will be a predicted reduction in productivity stemming from lochans affected otherwise by wind farm infrastructure equivalent to the loss of production from 2.2 breeding pairs of divers per annum. It is considered that this aspect of the development needs further consideration. Restriction of times when blasting could occur (i.e. no blasting during the breeding seasons for the various species) would mitigate some of the potential impacts but these would still remain, albeit to a lesser extent, for resident species. Blasting restrictions may have knock on effects within the proposed development timescales. Appropriate mitigation could be built into the various construction method statements under guidance from SNH.

Whilst the Habitat Management Plan has more detail on the “at risk” habitats and species, the proposals within it are presented in such a way that they are assumed to succeed. There is no clear cut scientific evidence to back this up, indeed there is every possibility that attempts at habitat restoration using untried and untested means will have the opposite effect. The pilot area for the restoration management techniques identifies, inter alia, a number of priority lochans for divers with work commencing on these within the first 5 years of the development. These lochans are currently utilised by divers and no consideration is given in the submission to the fact that any reinstatement/restoration work may result in displacement of the birds both temporarily and permanently. Neither the 2009 ES nor 2010 Addendum address mitigation measures should the proposed reinstatement/restoration measures fail to achieve their aims.

Restoration work is suggested for the quadrant from which all turbines have been removed even though the reason for removal is that this area has been identified as supporting the best examples of healthy blanket bog. It is unlikely that any restoration work will improve the situation further and the thinking that, by doing so, the area will attract those birds displaced from other parts of the wind farm development is flawed in the opinion of the Planning Service. Assuming a habitat is in good condition, birds will be occupying the area in numbers that can be supported within the limits of territory required by breeding birds. Any displaced birds may well compete with “resident” birds for territory but the outcome will be further displacement and no overall change in population numbers in this area. Improvements to already good quality blanket bog habitat should not be accepted as a means of mitigation against displacement of birds from other parts of the application site subject of development as they may have the opposite effect.

Previous comments on the 2009 ES in respect of potential siltation impacts on freshwater fauna and flora have not been satisfactorily answered by the 2010 Addendum. By reducing the number of watercourse crossings and having silt traps downslope of those remaining, the assumption made is that there is no significant threat to watercourses and no offsetting or compensation is required. Thus the improvements of the riparian habitat (and removal of 3 barriers to passage of migratory fish already present in the proposed development area) proposed in the habitat management plan are considered as “beneficial enhancement action” only.

However, 79 water crossings are still proposed and no consideration has been given to possible siltation issues resulting from construction of silt/ sediment traps close to water courses, impacts of ‘clean’ water run out from these traps under flood or storm conditions or from significant peat erosion slips. Work on the peat slip at Channerwick showed that siltation effects can be severe and extend over large areas and, depending on location, out into the marine environment. It would not take much silt to smother salmonid eggs or clog up the interstitial spaces in the gravel used by salmonid species as redds. The Addendum indicates that freshwater surveys would be conducted pre-construction, one post-construction and one 3 years after that. It is recommended that surveys also be undertaken during construction to ensure that siltation issues are picked up early. The Planning Service believes that insufficient weight or consideration has been given to freshwater habitat and indigenous species and the comment that a revised ecological impact assessment (in respect of this habitat) is present in Chapter A10 of the Addendum is erroneous.

Similarly previous comment that the 2009 ES did not assess potential impacts on base rich flushes (protected under the Habitats Directive and Water Environment and Water Services (Scotland) Act 2003) within the site has not been addressed in Chapter A10 of the Addendum as stated in Appendix A1.1. Nor has the impact of habitat loss on Eudonia alpine been assessed as highlighted in response to the 2009 ES.

#### **7.4.6 Marine**

From a marine perspective the main issues identified from the 2009 ES were the possibility of heavy silt loadings entering the marine environment via freshwater channels as a result of operational activities particularly under flood conditions. The Channerwick peat slippage demonstrated that silt and debris are carried some distance out to sea and can have significant smothering effects on benthic biota. Schedule 4 of the SEMP provides detail on how silt loading of watercourses will be minimised during construction activities through the use of silt traps, silt fences and straw bales. It is considered that these will be effective under normal conditions but it is uncertain as to whether they would be sufficient to deal with the significantly increased loadings that would be encountered under flood conditions, particularly where soils/ peat have been loosened as a result of construction activities. This potential should be addressed

within the SEMP, along with mitigation measures, prior to construction starting, assuming permission is granted.

As the 2010 Addendum and SEMP Schedule 4 assume that silt loading will be minimal neither have considered impacts on aquaculture developments within the voes that watercourses from the site drain into. Once again the Addendum has not considered a worst case scenario and has ignored this potential. Given that the aquaculture industry is currently worth £160 million per annum to the islands' economy (4 times the value of the wind farm) this should have been considered. Appendix A1.1 states that economic importance of whole fisheries sector, and aquaculture in particular, has been considered in Chapter A17 of the 2010 Addendum – this is incorrect. Fisheries, in the shape of fish catching, are mentioned once and effectively dismissed as turnover from the wind farm will be equivalent to it. This is somewhat disingenuous – the fisheries sector as a whole is worth over £300 million to the local economy (9 times the potential of the wind farm).

In summary it is considered that the Addendum is still overly simplistic in its approach to possible impacts on marine aspects and associated socio-economic factors.

#### **7.4.7 Landscape and Visual**

##### Landscape capacity and the LUC study – Background

Shetland Islands Council (SIC) commissioned Land Use Consultants (LUC) to undertake a landscape assessment and capacity study for wind farm development in Shetland and report on the findings. The report was finalised and received in March 2009 and is a tool to assist SIC's Planning Officers in their assessment of wind farm applications. Whilst it is not a policy document it is used to inform the development of Council policies in response to, and in compliance with Scottish Planning Policy.

The LUC report is considered a transparent and robust assessment of the landscape sensitivity and capacity of the Shetland Islands, being commissioned by the Council as a public body and unfettered by any private commercial interests. The LUC study is used for Interim Planning Policy formulation and at the time of reporting the Council, in conjunction with statutory consultees, has undertaken a review of the Council's Energy Policies currently contained within the Shetland Structure Plan (2000) and the Shetland Local Plan (2004) and has prepared Draft Interim Planning Policies for Wind farm Development over 20 MW in Shetland. It also provides guidance for the assessment of smaller wind farms, particularly those that require EIA. The Draft Interim Planning Policies have recently been subject to public consultation (closing date for representations having been 19 November 2010).

The LUC study authors recognised that there is currently no agreed method for evaluating sensitivity or capacity of different types of landscape. However the approach taken by the LUC study builds on their experience from previous and ongoing studies and their method

developed for assessing wind farm development in Scotland and elsewhere. The study also draws on contemporary thinking on techniques and criteria for judging landscape sensitivity and capacity as documented in Topic Paper 6 by Scottish Natural Heritage (SNH) and The Countryside Agency (2002). In addition LUC reviewed a number of similar reports and used those to inform the methodology, a full list citing references and reports is available in the LUC document.

The findings of the report attach a level of sensitivity to wind farm development for each landscape character area, and propose indicative landscape capacities for wind farm developments in these locations; this is based on commercial turbines with a height range of 90 – 150m to blade tip which are typical of the current generation of commercial turbines. The capacities shown are approximate and intended to give an idea of the size of development rather than define exact numbers. At the more local level, the study also offers design guidance for appropriate development in each area by suggesting ways of locating turbines so as to best militate against the landscape and visual impacts.

Various landscape sensitivity criteria are used in the study, ranging from landform and scale to perceptual aspects. For the purpose of this study sensitivity is the extent to which the character of the landscape is susceptible to change as a result of wind farm development. It is an indication of the overall robustness of the landscape and the extent to which it can accommodate wind farm development. This is as defined in the Countryside Agency and Scottish Natural Heritage (2002) Landscape Character Assessment: Guidance for England and Scotland. Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity. Landscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how people perceive this.

The following is a comparative study between the findings and recommendations of the LUC report against the details submitted under the initial 2009 Viking Energy development proposal, and subsequent 2010 Addendum, it is intended to give a broad indication of compliance and consistency between the Council's landscape sensitivity and capacity assessment that, as previously stated, is considered a robust assessment, and the applicant's proposals.

This report is not exhaustive and is intended to provide a broad comparison based on the reported data, not necessarily a critique of the process or methodology used to derive the results. It should be borne in mind that Scottish Natural Heritage, the Government's advisors on landscape matters, have been received and are available separately.

The Planning Service suggest that the visual compartments (LUC) and Landscape Character Areas (Viking Energy) are generally comparable to enable some conclusions to be drawn, the primary elements capable of direct comparison are in relation to overall landscape sensitivity including all criteria and sensitivity specific to

landform characteristics, landcover, and capacity etc. Attaching an 'approximate' range of proposed turbine numbers is as a result of the differences in geographical extent between the LUC and Viking Energy study areas.

Table 1 below, provides a matrix outlining landscape capacity and sensitivity of each comparable area. This is followed by a brief discussion on the results, comments on the suitability of the development, and its compliance with the study objective to guide appropriate wind farm developments to suitable locations. The applicant's proposal figures contain the initial numbers of proposed turbines, and the revised numbers following the Addendum submission in response to objections from consultees in *italics and with A prefix*.

Table 1 LUC/Viking Energy Results Comparison Matrix

	SIC LSCS	Viking Energy ES
1. Visual compartment/Site Location	Sullom Voe	Delting/Major Uplands
Overall Sensitivity	Moderate (low upland)	Low
Indicative landscape capacity	13-25 Turbines 20-50MW	Approx 26-30 Turbines <i>(A) Approx 17- 21 Turbines</i> Up to 75MW
2. Visual compartment/Site Location	West Kame	Kergord/Delting/Major Uplands
Overall Sensitivity	Moderate/Low	Low-Low/Medium
Indicative landscape capacity	13-25 Turbines 20-50MW	Approx 31-45 Turbines <i>(A) Approx 30-44 Turbines</i> Up to 160MW
3. Visual compartment/Site Location	Lunnasting, North Nesting, Whalsay and Out Skerries	Collafirth and Nesting (Northern Grouping)/Major Uplands
Overall Sensitivity	Moderate	Low
Indicative landscape capacity	13-25 Turbines 20-50MW	Approx 30-49 Turbines <i>(A) Approx 22-41 Turbines</i> Up to 148MW
4. Visual compartment/Site Location	Mid Kame and Whiteness	Nesting (Mid Kames Ridge)/Inland Valley
Overall Sensitivity	Moderate/High	Low/Medium
Indicative landscape capacity	< 6 Turbines < 20MW	Approx 11-29 Turbines <i>(A) No Change</i> Up to 105MW
5. Visual compartment/Site Location	Central Mainland East	Nesting/Major Uplands

Overall Sensitivity	Moderate	Low
Indicative landscape capacity	< 12 Turbines < 20MW	Approx 20 Turbines (A) Approx 15 Turbines with one re-located. Up to 54MW

## Visual Compartment Discussion

### 1. Sullom Voe v Delting/ Major Uplands

The immediate area subject to the development proposal is confined to the large areas of upland as described in the LUC report. LUC describe these areas as being a simple display of predominantly heather moorland and peatland with a number of lochs. The major uplands constitute distinctive areas of higher ground that contribute to the overall physical and visual landscape structure of Shetland. The landscape is further characterised by its simple skylines, which frequently form a large-scale backdrop to surrounding landscapes. Panoramic views can be obtained from highpoints in this landscape. LUC attach a moderate sensitivity to the overall area, being higher sensitivity in areas of small-scale settlement and crofting land towards the coast, and lower sensitivity in large areas of upland moorland (site of proposal). The upland sub area (turbine site) is considered of a lower sensitivity.

In relation to the indicative landscape capacity to accommodate wind farm developments, LUC consider the scale, simple landform and localised developed nature of this landscape as suitable characteristics for accommodating wind farm development, and as a result the LUC report attaches a lower sensitivity to wind farm development in the upland moorland areas.

However LUC consider that the effect of wind farm development on undeveloped areas should be considered in terms of the scale and siting of turbines. Setting turbines back from the edges of the hills, where they will not be inter-visible with the inland valleys of Kergord and Patta Dale will reduce effects within adjacent landscapes. (D4 Kergord and Petta Dale have a moderate sensitivity (LUC) and low to medium sensitivity by Viking Energy). Furthermore LUC consider the siting of turbines within this area should be closely related to the existing developments at the Sullom Voe oil terminal.

The ES describes these Major Upland areas as distinct from other parts of Shetland that are generally low lying. They have a large scale, undeveloped quality and form an important backdrop to the lower peatlands, the settled coast and the voes and valleys. The major Upland Landscape Character Area (LCA) takes the form of a distinct series of rounded north-south ridges located in the central part of the mainland. It is an uninhabited, large scale and inaccessible landscape, barren in nature, of peaty mires, standing water and heather moorland. There is a uniformity of colour and texture through the landscape, which can lead to monotony. The applicants attaches a predominantly medium landscape scenic quality with localised and marginal areas of medium to high and medium to low quality with the turbine area given a low sensitivity.

The applicants identify that this landscape is not covered by any designations and consider the area to be a fairly common and unexceptional type within Shetland as a whole, although it does provide a backdrop for other more highly valued landscape types and therefore the landscape value is low.

Whilst it is accepted that, despite using defined criteria, the assessment of landscape character is largely subjective, the choice of depreciative wording in the Viking ES serves to downplay the value of the landscape and is not consistent with the more neutral expressive wording used by LUC.

*Notwithstanding the above, it would appear that in terms of landscape sensitivity, the results are fairly consistent, however the proposed development, despite a reduction in numbers by the deletion of 9 turbines through the submission of the Addendum, is in excess of the indicative capacity as defined by the LUC, and whilst the number of turbines is only slightly in excess of that suggested as an indicative capacity by the LUC report, the spread and overall pattern is maintained, thus limiting the possible benefits of a reduction in numbers.*

*Furthermore the skyline, which is at present uninterrupted and given a moderate sensitivity by the LUC report, would be punctuated and interrupted by their high level location. This may have implications for the neighbouring inland valley and farmed and settled lowland and coast. It does not appear that a viewpoint was included to illustrate visibility from these areas which have a higher level of sensitivity therefore it is not possible to judge levels of intervisibility. However visual receptors within these neighbouring areas are attached a visual impact both during and upon completion and so some indication of visual impact, rather than landscape impact can be identified ranging from no view to substantial visual impact.*

*In addition the LUC report suggests that localised areas surrounding Sullom Voe could accommodate development whereas the proposed development is much more extensive and located away from the Sullom Voe developed area. It is a disappointment to the Planning Service that the proposed arrangement in the Sullom Voe compartment is not more closely related to the existing developments so as to limit the overall spread of development.*

## 2. West Kame v Kergord/Delting/Major Uplands

According to the LUC report this visual compartment consists of extensive areas of upland moorland fringed by crofting land along the sheltered voes. For the purpose of this study the development area is confined to the upland moorland, with some turbines proposed close to the periphery of the inland valley of Kergord and Whiteness. LUC consider the simple skylines as the background to the lower lying parts of this landscape. They also consider that elevated parts of this landscape allow a high degree of intervisibility with surrounding visual compartments.

LUC attach an overall sensitivity as moderate/low, with the capacity to accommodate up to 25 turbines that would potentially be highly visible from a wide area. They consider that the location of wind farm development should avoid the immediate proximity to settlements and should optimise screening opportunities within the landscape to prevent potential effects on the adjacent National Scenic Area (NSA). Sensitive siting of turbines away from ridge summits, and on the edges of upland areas will be required, and consideration should be given to the composition of views from public viewpoints. Areas to the south and those with close intervisibility with the NSA are unlikely to be able to accommodate development. Any development needs to be carefully assessed in terms of cumulative effects with development in nearby visual compartments.

The applicants attach a low sensitivity to the major upland area, and low to medium sensitivity to the inland valley area, they consider sensitivity to change is low because of the open, large scale landscape character with few distinctive features and areas on the periphery influenced by existing developments on the lowland and the coast, however the magnitude of change would they say be high, and whilst this is a low sensitivity, large scale and relatively featureless landscape it would nevertheless experience a high degree of change which is considered significant.

*The level of sensitivity is consistent between the study and proposal; however, the proposal submitted as revised is for a number of turbines in excess of the recommended capacity, with just 1 turbine deletion made within in the submission of the Addendum. The proposed turbines are located at high level with some substantial visual impact experienced by nearby settlements, and some moderate impact to the NSA to the south. It is not clear to the Planning Service whether the proposal fully utilises the opportunity for screening within the landscape and whether the relationship with the NSA is properly considered within the submission.*

### 3. Lunnasting, North Nesting, Whalsay and Out Skerries v Collafirth and Nesting (Northern Grouping)/Major Uplands

LUC describe this landscape as extensive areas of upland moorland, incised voes and inland valleys, fringed by coastal crofting land and undulating moorland with rocky outcrops. Settlements are scattered throughout the crofting land and are locally concentrated in the sheltered valley at Voe and the settlements of Laxo and Vidlin.

The simple skylines of the upland moorlands provide a background to the lower lying parts of this landscape. There is a strong association with the seascape as views are directed along deeply incised voes and towards coastal features and islands by extensive uplands. This landscape will be frequently observed from ferries to and from Whalsay, Out Skerries and Yell. Elevated parts of this landscape allow a high degree of intervisibility with the surrounding visual compartments.

LUC attach a moderate sensitivity to this area, consisting higher sensitivity to coastal settlements and crofting land, and lower sensitivity to upland moorland (development area).

The indicative capacity for the area set by LUC is for up to 25 turbines in localised areas of upland landscaped considered of low sensitivity. Development in this landscape will potentially be widely visible from adjacent visual compartments. The location of wind farm development within this landscape should avoid immediate proximity to settlements and sensitive coastal landscapes, focusing on areas of lower sensitivity in association with main road corridors. Sensitive siting away from ridge summits will be required.

The applicants consider the area to have a low sensitivity to change. This is due they say to the open large-scale landscape character with few distinctive features and areas on the periphery influenced by existing developments on the lowlands and coast. However they consider the magnitude of change to be high.

Viking Energy considers that this low sensitivity, large scale and relatively featureless landscape would experience a high degree of change. Impacts would therefore be moderate to substantial.

*Both LUC and Viking Energy attach a similar sensitivity to change, being low in the upland areas. However the proposal is for a number of turbines significantly in excess of the recommended indicative capacity, with some of the proposal's turbines located at ridge summit locations, and covering a broader overall area than may be available close to the lower sensitivity main road corridors.*

*The deletion of the turbines at Collafirth has created greater separation between the Delting and Nesting turbine groups. This is considered to benefit the landscape at this local level, yet despite this, the overall spread and numbers are still in excess of the capacity as suggested by LUC.*

#### 4. Mid Kame and Whiteness v Nesting (Mid Kames Ridge)/Inland Valley

LUC describe this landscape visual compartment as containing distinct linear valleys separated by the low linear upland ridges. The proposed development as it concerns the compartment is confined to the Mid Kame ridge. LUC attach a moderate/high overall sensitivity to the area, being distinct linear landforms with an enclosed valley nature.

LUC consider that the visual compartment is likely to have the capacity for less than 6 turbines; any development should be of a suitable scale and should be designed to fit with the linear character of the Kames. Due to its elevation any development will potentially be widely visible. LUC continue: careful consideration is required with regard to turbine sizes to prevent any apparent dwarfing of the low upland ridges through diminishing the perceived scale of distinctive landscape features.

LUC continue by confirming that wind farm development could be accommodated within this landscape; however the distinct low linear upland ridge landform and prominent visibility along key routes requires careful consideration of turbine siting and scale. The topography of the Mid Kame ridge may be able to accommodate a carefully composed linear development of appropriate sized turbines. Any development needs to be designed so that it fits with the scale of the landscape, the distinctive landforms within it, and the shape of the landform, to prevent effects such as the landscape being visually flattened, or the way the distinctive linear form of the ridges reads in the landscape being altered. Development within adjacent visual compartments with which there would be intervisibility would need to reflect the linear design of development on Mid Kame. Intervisibility with development with a different design response to the landscape (e.g. a group or cluster) would not be appropriate. Development giving rise to incompatible cumulative effects may compromise the scenic quality of this area.

The applicants consider that both valleys (Kergord and Petta Dale) would potentially be directly and indirectly affected by the proposed development as turbines are proposed along the Mid Kame ridge and immediately to the east and west. They attach a medium value and scenic quality to the area. Sensitivity to change is considered by the applicants to be low to medium because of the open and large-scale character. Sensitivity is they say reduced slightly because of the main roads present within these valleys.

Viking Energy consider the turbines would be very noticeable on the Mid Kame ridge, but they consider them to be a linear landscape feature in their own right, with the magnitude of change being considered high.

The level of sensitivity of the landscape visual compartment given by the applicants is inconsistent with the LUC study. It is considered by the Planning Service that whilst the turbine layout reflects the linear landscape feature, the Mid Kame ridge would be visually flattened by the large scale of the proposed turbines, Furthermore the proposed number of turbines is in excess of the LUC recommended capacity, with the linear arrangement visually being at odds with the adjacent visual compartments and turbine clustering therein.

*The scale, location and extent of the proposals in the Mid Kame and Whiteness compartment should be reconsidered to address issues of cumulative effects with neighbouring compartments and separation of each component of the wind farm proposal, this is necessary to militate against the creation of a wind farm landscape and to allow at least some respite from the presence of turbines. Furthermore the scale of each turbine is such that the landscape flattening would compound the visual effects and limit the opportunities for mitigation through location and design.*

## 5. Central Mainland East v Nesting/ Major Uplands

As described in the LUC assessment this landscape consists of large-scale upland ridges, rounded moorland and areas of coastal

crofting and farming land fringing a number of sheltered voes, with the uplands providing a backdrop to these. This is a considerably developed landscape with frequent infrastructure, settlement and man made features. This is an expansive landscape, with a comprehensive pattern of upland moorland interspersed with settled farming and crofting land. The developed character and frequent presence of settlement lends to it having an overall moderate sensitivity.

Inter-visibility with adjacent visual compartments is locally limited by a series of northeast to south west orientated ridges. Frequent views of the landscape can be obtained from ships and ferries.

LUC consider that the visual compartment is likely to have the capacity to accommodate up to 12 turbines. Due to the likely elevation of turbine locations development in this landscape will potentially be widely visible from adjacent visual compartments. Wind farm developments should, LUC recommend, be sited away from the more sensitive coastal edge and set back on higher ground or in association with existing areas of development (i.e. roads and quarries). Care should they say be taken to avoid the direct juxtaposition of large scale turbines and small scale landscape features and scattered settlements at the coastal edge.

The Viking Energy proposal confines turbines within the higher ground of major uplands within this visual compartment. The applicants consider the sensitivity to change to be low because of the large-scale open character of it, with there being few distinctive features and areas on the periphery influenced by existing development on the lowlands and coast. This area would nevertheless experience a high degree of change; impacts would therefore be moderate to substantial.

The applicants have attached a level of sensitivity to the area that is not consistent with the LUC study, although it should be recognised that the visual compartment as defined by LUC is larger than the proposed development area within it, and extends south towards Lerwick. The number of turbines proposed is in excess of the LUC recommended indicative capacity, and whilst there are 5 deletions and one re-location made with the submission of the Addendum, the impacts are not significant due to the remaining turbines numbers, densities, and overall spread.

### General Observations

Having reviewed the initial 2009 proposal against the Addendum, and in respect of landscape and visual impacts, the Planning Service notes that little weight is given to landscape and visual mitigation in formulating the Addendum modifications to them. The applicant cites ornithological, archaeological and aviation interests as the main drivers for the modified proposal. However, the deletion of 23 turbines and the re-location (200m) of 1 turbine does alter the landscape and visual impact to varying degrees, depending on the visual compartment and viewpoint. Most notably the removal of turbines in the Deltung compartment serves to thin out the density of

the wind farm, but fails to alter the overall range of visual impact. The deletion of the Collafirth group of turbines as part of the proposal helps to separate the remaining wind farm groupings when travelling north and south through the north mainland, and the removal of some turbines in Nesting helps to set back that group from the coastal and developed areas.

Despite the above, in all cases the applicants have proposed a number of turbines in excess of that which is considered appropriate under the LUC study. Furthermore, in each landscape character area the developer does not appear to have located and arranged the proposal in a way which is consistent with the Landscape and Visual Guidance notes compiled by LUC, which would require careful siting to avoid prominent ridgelines etc. The Planning Service considers that, should the proposals be consented and go forward, the landscape of the affected areas would undergo significant change in character to an extent that is incompatible with the study objectives of recognising the landscape sensitivity of the Shetland Islands and steering an appropriate type and scale of development to an appropriate location. It is considered that as a result of the proposal the landscape would become one of a 'wind farm landscape' rather than a landscape with 'wind farms' contained within it.

The applicants' 2010 Addendum submission down plays the importance and relevance of the LUC study, which was issued prior to the initial 2009 ES submission. Viking Energy, in response to SNH objections citing the LUC study, states that the LUC report is a privately commissioned study intended to inform SIC Supplementary Planning Guidance, and is not itself Council policy. The LUC study is in fact a publicly commissioned study, and is considered by the Planning Service to be transparent and robust, having employed contemporary methods and guidance in the formulation of its conclusions, and is unfettered by commercial interests. The study is used as a tool by officers when considering wind farm proposals, and is being used in the creation and adoption of Interim Planning Policies, in relation to which the Council has recently consulted the public and other organisations.

It has, in the Planning Service's view, to be noted that landscape capacities recommended by LUC were determined by professional judgement based on the results of the sensitivity study. Capacity was determined by looking at the extent and distribution of areas of lower or moderate sensitivity (reflecting the extent of LCAs), whilst taking on board issues to do with inter-visibility and cumulative effects.

Ultimately landscape capacity will be affected not only by the location and extent of areas of lower and moderate sensitivity, but by the size of the LCA and visual compartment, current levels of development and by other factors, including technical feasibility, which are not considered in the LUC report.

Whilst the proposal is, as has been put forward by the applicants, as a single submission, the layout, separation and juxtaposition of

turbine groups creates an appearance of several large wind farms rather than a single entity, and despite the deletion of the Collafirth grouping, the inter-visibility is such that a large proportion of central/north mainland Shetland will appear as a wind farm landscape, both from within and from sea routes and the outer islands. Whilst the location of turbines within the proposal largely avoid the more sensitive coastal and crofting landscapes, there is a clear absence of screening opportunities that would otherwise assist in reducing the impact on these receptors, such as trees and forests, and whilst the applicant would propose mitigation through screening it is not accepted that, given Shetland environmental conditions, this is a practical alternative that would be of a benefit, nor is it detailed sufficiently in the ES and its Addendum.

This report within this section provides the Planning Service's comment on an interpretation of the number, scale and extent of the proposed wind farm in the context of the landscape in which it is sited, against the advice and guidance provided by the Landscape Sensitivity and Capacity Study for Wind Farm Development on the Shetland Islands. The comments and observations should be read in conjunction with the 2009 ES and 2010 Addendum submissions, and the response and advice on the proposal that has come from Scottish Natural Heritage (SNH) on landscape and visual matters. The SNH response provides a detailed component breakdown of the development proposal, and suggests mitigation should the development be approved contrary to its objection, partly on landscape impact grounds.

This section of the report was completed by the Planning Service independently from the SNH assessment of this aspect of the Viking Energy proposal, to allow a check to be made of the Council's planning officer's interpretation and use of the LUC study, for comparison with the interpretation and conclusions derived from the specialist landscape advisors at SNH.

Reassuringly for the Planning Service, with both it and SNH parties deriving some or all of their baseline data from the LUC study, the results of both assessments are comparable with similar interpretations and views arrived at, these being that the proposal is in excess of the capacity that the Shetland Landscape can accommodate without there being significant change to the landscape character and detrimental visual impacts.

The Planning Service considers that the proposal will require a further reduction in turbine numbers, notably along the Mid Kames and Petta Dale; further consideration of location and siting in line with the guidance provided by the LUC; and more detailed consideration of the ancillary and associated infrastructure (access tracks, borrow pits etc) to provide a clear indication of the cumulative effects from each constituent part of the proposed wind farm, before an acceptable level of impact can be achieved.

Having said all of the above, and notwithstanding that the applicant seems to imply that landscape character and capacity are of lesser importance to some other matters needing to be considered, this

topic area has been the subject of some of the most numerous, extensive and cogently argued representations from consultees and other respondents, and is clearly a matter of very widespread concern and debate. It is clear that, if approved, the development would transform the landscape of a very significant area of Shetland, and much of that transformation would be permanent, even if the turbines were ultimately removed, because many other aspects of the development would remain. 29 of the 37 objectors cited adverse visual impact and 26 of them said the development was out of scale with the Shetland landscape.

#### Landscape Design Principles and mitigation

SNH prepared a detailed response to the 2009 ES in terms of the landscape and visual impacts of the proposed wind farm (SNH 25 September 2009). This was that the proposed wind farm as originally submitted the landscape capacity of mainland Shetland and would have major adverse impacts on visual amenity.

In its commenting on the revised proposals following the submission of the 2010 Addendum (SNH 19 November 2010), SNH maintains its objection to the revised proposals on the basis of landscape and visual impact unless a further 17 turbines are removed from the proposed development. It is difficult, given the commonality of the conclusions that have been drawn by the Planning Service and SNH in relation to consideration of landscape and visual impact of the proposal (as outlined above) for the Planning Service to do anything other than agree with SNH, which it consulted, and which is the Government's adviser on issues relating to landscape and visual impacts.

The ES sets out the key landscape and visual design principles (ES Appendix 4.6 and 4.7) and states that the "design optimisation process" for the location of the turbines (which went through a series of iterations informed by various different constraints and considerations), has been to minimise potential impacts upon sensitive landscapes and visual receptors and to create a turbine layout which is, as far as practicable bearing in mind other constraints, proportional to the landform of the site and adjacent areas and which seeks to achieve a balanced arrangement of the turbines with the surrounding landform and skyline as seen from key receptors.

In Chapter 8 Landscape Character, and Chapter 9 Visual Impact (and various appendices), both in the ES and the Addendum, in terms of mitigation it is stated that the key landscape and visual constraints and development principles were identified at an early stage of the project. These were then used at the design stage to help reduce and minimise potential impacts on landscape and visual amenity and are referred to as primary mitigation. It is stated in the ES (8.7) that these measures have been taken account of in the landscape and visual assessments.

Initial landscape constraints (ES Appendix 4.7) were identified by a review of all designated landscapes within 15 km of the periphery of the site (ES fig 4.7.4a). Scenic quality was also evaluated and

mapped over the same area (ES fig 4.7.4b). Together this led to an evaluation of sensitivity of landscape character areas (ES Fig 4.7.4c).

According to the ES, applying these broad landscape constraints led to the development being directed away from being sited within or adjacent to the most valued scenic smaller scale and sensitive landscapes limiting development to the larger scale landscape of the mainland of Shetland considered less sensitive to wind farm development.

In Initial Visual Constraints (ES Appendix 4.7) it is stated that in order to mitigate potential impacts on visual receptors where possible the foreground screening effect of local topography and ridgelines was used to eliminate or reduce views of turbines. The Zone of Theoretical Visibility (ZTV) diagrams and “Wind Farm” software guided the extent of the setback from potential receptors. However it was stated that this was not always possible due to the juxtaposition of settlement and topography e.g. where receptors are orientated directly towards proposals and/or elevated in combination with a foreground of either sea or gentle slopes with no foreground ridges to assist screening.

Figure 4.7.8 shows an early consultation layout (2007) of 191 turbines. Figure 4.7.9 shows post coarse landscape constraints layout of 167 turbines. There then follows a series of wire frame drawings, which show Design Phase 4 – Landscape and Visual Optimisation (4.7.11 to 4.7.16) showing before and after views from Lunna House, Voe, Aith, Brae, Laxo and Weisdale.

The design principles are set out in the ES at Appendix 4.6. The underlying design principle has been to design a wind farm that achieves an appropriate balance between identified technical and environmental constraints. A wide variety of technical and environmental requirements were identified. In relation to landscape and visual design principles the aim of the design optimisation process was stated as “to minimise potential impacts upon sensitive landscape and visual receptors and to create a turbine layout which is, as far as practicable bearing in mind other site constraints, proportional to the landform of the site and adjacent areas and which seeks to achieve a balanced arrangement of turbines with the surrounding landform and skyline as seen from key receptors (ES Appendix 4.6D). The landscape and visual design principles included a set of stated objectives set down at ES Appendix 4.6D that included:

- ***Minimising, by layout design and location, potentially adverse impacts on***
  1. ***Nationally important landscapes and historic and designed landscapes (Shetland Scenic Area and Lunna House)***
  2. ***Visual receptors (settlements) close to the proposals (Aith, Brae, Voe and Laxo)***
- ***Creating a wind farm of a size and density that reflects the scale and nature of the landscape in which it is***

***located and to relate turbine layout to its landform and surroundings***

- ***Achieving a balanced composition in terms of overlap relationships between turbines and skyline effects***
- ***Paying attention to design issues including turbine colour, siting, design and form of the control building and alignment of access tracks to ensure that they relate to local landscape character***
- ***Locating temporary construction operations to minimise L & V effects and ensure mitigation proposals are in place to ensure effective restoration and minimise effects.***

In its comments on the ES dated 25 September 2009, SNH noted that whilst sound in themselves, the design principles do not always seem to have been applied successfully in the ES as is evident from the fact that so many significant impacts are predicted to occur and the ES acknowledges that its screening principle is not effective because of the juxtaposition of settlement and topography.

SNH noted that without the opportunity to apply the detailed design and modelling tools used by the applicant it was difficult to identify optimal siting, layout and design solutions. However after having reviewed the guidance presented in the LUC study (Landscape Sensitivity and Capacity Study for Wind Farm Development on the Shetland Islands 2009) and the visualisations provided with the ES, SNH set out a list of priorities for improvements to the siting, layout and design of the proposal as follows:

- ***Consider relating turbines more closely to development at Sullom Voe;***
- ***Offset more turbines from the upland edge, especially above roads and settlements;***
- ***Further reduce impacts on NSA land at Dunrossness and the Deeps to the south;***
- ***Reduce impacts on the setting of the designed landscape at Lunna House***
- ***Remove turbines from the Mid Kame ridge because they are:***
  - ***Particularly out of scale with the distinctive landform of this low ridge***
  - ***Visually intrusive on valleys to east and west and on the A970 corridor***
  - ***Present a linear layout that conflicts with more organic layouts elsewhere***
  - ***Overlap and form a solid mass in some views from the north, e.g. from Voe***
  - ***Remove some of the most prominent turbines in other areas to reduce the extent and scale of impacts overall***

The design principles and design development is the primary mitigation in L&V terms, and although the landscape and visual constraints applied are outlined in Chapters 8 and 9 of the ES the design optimisation exercise did not, in the opinion of the Planning Service, seem to have been wide ranging, and did not as a result

seem to have achieved much in the way of obvious improvements in turbine siting and layout from a landscape and visual impact perspective.

At paragraph 12.3 of its response to the ES (25 September 2009) SNH indicated a total of 41 specific turbines in various quadrants that should be removed to improve the landscape and visual impact of the proposed development.

#### Impact of Proposed Changes in Turbine Numbers

The submitted Addendum removes 23 turbines from the proposals. Only 11 of the turbines recommended for removal by SNH to improve L & V impact have been removed (Delting 1 to 3 and Collafirth 34 to 43), the remainder having been removed primarily to reduce impacts on various bird species and because of potential conflicts with aviation interests at Scatsta.

The Addendum provides a limited re-assessment of the impact of the revised proposals on the general assumption that the revisions made for other reasons would have the effect of reducing the landscape and visual impacts of the development. Impact significance on landscape character areas are judged in the Addendum to be unchanged, except locally around Collafirth. SNH in its response on the revised proposals (19 November 2010) confirm that this is the case. SNH go on to point out that in the Addendum there is no direct response to most of the landscape issues raised in its response and that priority has been given to the removal of turbines for a variety of reasons rather than for landscape or design reasons. SNH remains especially concerned at the failure of the revised proposals to reduce the landscape character impacts of the development on local landscape character area D4a (the Valley of Kergord and Petta Dale) that lies to the west and east of the Mid Kame ridge. SNH points out that as this area contains 2 key north to south routes (B9075 and A970) it strongly influences perceptions and experience of the Shetland Landscape as a whole. In the ES the impact of the development on this local landscape character area was assessed as substantial (the highest level of impact significance, a level not identified anywhere else in the study area).

In its comments on the ES SNH advised that amended proposals must address this impact and they specifically recommended that turbines K78 to K88 should be removed from the Mid Kame ridge. The location and layout of these turbines in particular do not accord with the design principles set out as the primary landscape and visual mitigation measures. Elsewhere the layout and design of the turbines have a much more organic pattern than the linear pattern proposed in this area. When viewed from certain locations these turbines will appear as a solid mass. Given their location these turbines are visually intrusive to valleys both to the east and west, and SNH has pointed out that these turbines are particularly out of scale with the distinctive landform of this low ridge. SNH also recommended that the most prominent turbines on the east side of Petta Dale be removed (N90 to 91 and N106 to 109). However none of these recommendations have been carried forward in the revised proposals.

The Planning Service accepts to disagree with SNH's advice with regard to the need to remove these specific turbines (K78 to K88 and N90 to 91 and N106 to 109). The removal of these 17 turbines would bring the total numbers proposed in this area more in line with the landscape capacities as indicated in the LUC study. The removal of these turbines would also in the Planning Service's view lead to a significant reduction in the impact on the landscape character of the proposed development over a large part of the central north mainland of Shetland, as it would lead to a greater separation between groupings of turbines, therefore reducing the cumulative impact overall. It would mean that the development would comprise of 4 distinct groups instead of the 5 proposed in the Addendum.

SNH does not feel that the revised proposals satisfactorily address its concerns in relation to landscape character and capacity and it is maintaining its objections until at the least turbines K78 to 88 and N90 to 91 and N106 to 109 have been removed. It indicate that in terms of visual impact the removal of these turbines would lead to improvements especially in the Petta Dale (the main north /south access route). The removal of these 17 turbines would also have a beneficial effect on the effect of the development on the Dunrossness and Deeps section of the NSA as the number of turbines visible would be significantly reduced by as much as half when viewed from the northern part of the area which lies just 4km from the nearest turbines.

Therefore according to SNH there are a number of reasons for removing the specified 17 wind turbines based on a sound analysis of the potential impacts of the development. The Planning Service accepts the points made by SNH. However, the Planning Service would point out that the removal of the Mid Kame ridge, although having significant landscape and cumulative impact benefits, would not impact visually on significant numbers of receptors other than those travelling along the Lang Kames

#### Secondary Mitigation

In the ES at 9.6.3 it was stated that it was the intention, in due course, to implement a strategy of landscape management and habitat creation to reduce and offset potential impacts. However secondary mitigation measures had not yet been finalised/ agreed and so they were not being included in the assessment. The secondary mitigation being considered was: woodland screen planting to provide a degree of localised screening to reduce potential impacts; native woodland planting to improve the scenic quality of a landscape while providing habitat opportunities; and screening in the long term and native scrub planting to provide additional habitat opportunities, particularly along watercourses.

In its earlier advice on the ES SNH strongly advised against the mitigation of visual impacts through woodland screen planting as such planting would be ineffective, generally unsuited to the open treeless character of the Shetland landscape, and could be intrusive in its own right. The Addendum indicates that following advice

obtained from SNH the secondary landscape and visual mitigation will not be pursued further.

It will also be important, when e.g. habitat management proposals are being developed further, that landscape and visual impacts are considered, as well as benefits such as habitat creation. The Shetland Islands have an almost treeless landscape, the character of which would change if large areas were to be planted or managed differently e.g. controlled grazing.

#### Infrastructure - Landscape Impacts

The impact of the infrastructure required in support of the proposed development, with particular regard to roads, borrow pits, substations and control buildings, turbine foundations and crane pads, anemometer masts, set down areas, peat storage areas, stream crossings and on site welfare facilities etc, was significantly downplayed in the LVIA presented in the 2009 ES submission. The photomontages did show the route of some of the roads, but did not show any other infrastructure. The wire frame drawings in the ES only show turbines.

The photomontages appear to give a representation of the wind farm once complete with all the quarries and road edges, set down area crane pads etc fully restored. The visual representations must therefore in the Planning Service's view be considered to be set at some point in the distant future. The construction phase for the proposed wind farm will last for about 5 years, and thereafter it will be many years (if ever) in the Planning Service's opinion before the hillsides appear as shown on many of the photomontages. In the ES and the Addendum the L&V impact has only been assessed for the more permanent features in the landscape (the turbines), with the other aspects having been discounted on the basis of "the relatively limited extent of disturbance together with the short duration of effects and the related reinstatement of working areas would ensure that the effects of the construction phase on the landscape and visual amenity of the locality are limited" (8.6.1).

There was very little information on the infrastructure proposed with the turbines, other than indicative drawings, that are available within the body of the ES. The tracks are represented as a meagre dark line on the photomontages. Looking at existing tracks within the application site (which are small scale in comparison with the width of the tracks proposed for the proposed development), they are visible in the landscape due to the type of surfacing material used, the angle of cut into the landscape and the ancillary drainage that is required. Various borrow pit locations are included within the proposals, but the quality/colour of the rock to be sourced at each location is not yet known, so the influence this may have on the landscape and visual impacts of the roads/borrow pits etc as components of the proposal overall has not been able to be assessed by the Planning Service.

With the submission of the Addendum the proposed track network as a part of the proposal overall has been reduced in length by 14 km, with the single addition of track being in the southwest part of the

Nesting quadrant, near Flamister. Track width has reduced from 12 metres to 10 metres and a commitment has been given to the restoration of all double width tracks to single width on completion of construction of the turbines. Three 'primary' borrow pit areas of search and eight 'secondary' areas have been removed from the proposal. One additional area of search has been set in Kergord. It is stated in the Addendum that only 12 borrow pits would actually be opened (A 4.3.2).

The Addendum contains some more information in various sections of the SEMP (Appendix A14.6) relating to infrastructure and reinstatement. The SEMP contains documents including:

- ***Pollution Prevention Plan***
- ***Site Waste Management Plan***
- ***Drainage Management Plan***
- ***Watercourse Crossing Plan***
- ***Water Course Crossing Plan***
- ***Water Quality Monitoring Plan***
- ***Excavated Materials and Reinstatement Plan***
- ***Ecological Habitat and Species Protection Plan***
- ***Environmental (Incident and Emergency) Response Plan***

Appendix A14.4 Estimated Peat Extraction and Reuse Volumes provides an updated review of the preliminary peat excavation and reuse volume estimates provided in the ES.

The SEMP puts the onus on the contractor to prepare a variety of environmental management plans that include a programme of and method statement for excavation and reinstatement works, indicative track construction drawings, infrastructure construction drawings (all infrastructure) and temporary storage details. All of these aspects of the development will potentially have visual impact and could lead to significant changes in landscape character and further industrialisation of the landscape. It would therefore be prudent if the Council was to ask the Scottish Ministers for a condition to be applied to any permission granted, requiring further visualisations to be provided for agreement in writing, prior to construction, when detailed plans are more established that take account of all the major aspects of the infrastructure provision such as roads, borrow pits, and wind turbines

SNH did not object on the basis of impacts on landscape fabric in its initial comments on the ES. It did however point out that the ancillary elements to the wind farm, seen in conjunction with the turbines would bring a more developed character to the landscape as a whole. It also pointed out that the applicants have made no commitment to housing transformers within turbine towers, and given the additional visual intrusion that would be caused by a separate transformer building beside each turbine it was strongly recommended that should consent be granted, the inclusion of transformers in the turbine towers should be a condition of any consent.

The Planning Service cannot see in the Addendum any further commitment to housing the transformers in the turbine towers, and as the impact of separate transformer buildings has not been assessed in the L & V chapters, it is agreed that this must be a condition of consent.

SNH highlighted several areas within the proposed development site where it considered that the landscape would be most affected by the various ancillary development needed for the wind farm as follows:

- Northern and southern ends of Delting quadrant, Kergord quadrant and Mid Kame ridge, where lengthy access tracks would run up slopes at either end of ridge and be widely visible.
- Southern edge of Nesting quadrant, where two access tracks would lead north into the development area.
- Eastern flanks of Kergord quadrant, where several access tracks would cut across side slopes of Valley of Kergord and be visible from most of the valley in conjunction with the proposed converter station.
- Petta Dale where there would be four borrow pits in the space of 6km along or close to the A970

In its comments on landscape and visual impact in relation to the revised proposals set out in the Addendum, SNH confirm that the revised scheme has reduced the impacts on landscape fabric in some of the above areas:

- The northern end of the Kergord quadrant, where an access road has been removed.
- The southeast side of the Nesting quadrant, where one of the two proposed access roads has been removed.
- Petta Dale, where two of the proposed four borrow pits have been removed.

SNH broadly welcomes these changes but is still concerned that the access proposals on the western edge of the Valley of Kergord, would lead to several access roads cutting across the side slopes of the valley that would be widely visible in conjunction with the proposed converter station. SNH also questions the need for two separate and lengthy access roads at the northern end of the Delting quadrant, particularly given the removal of 9 turbines in this quadrant. In addition, SNH also notes that the revised scheme may now include earth bunding to screen tracks and turbine bases for the benefit of breeding red throated divers on three lochs in Nesting and one in Delting. The location and size of proposed screening cannot be determined at present, but it could have significant, albeit localised, impacts upon these open moorlands.

It is also noted in the Addendum (Appendix A14.4) that local peat storage areas may be formed adjacent to the turbine bases and permanent hard standing areas which may be used to restore these areas during the decommissioning period. It would appear that there could be a number of additional ancillary structures or constructed

features within the landscape that are largely unknown at this stage and which could have an impact on the overall landscape and visual impact of the development.

#### Cumulative Impact

Cumulative impact has been assessed in relation to Burradale wind farm, the proposed Cullivoe wind farm, and the proposed convertor station at Upper Kergord. The assessment concludes (9.8.10) that a number of landscape and visual receptors would experience significant effects if the proposed development were to be constructed in addition to the existing and proposed developments identified.

It would have been a useful exercise in assessing and understanding the scale of this proposed development in L&V terms if the cumulative impact of the various quadrants had been assessed against each other. The Addendum does not address this impact.

From a landscape and visual perspective the Planning Service feels that the ES and its Addendum does not adequately communicate the scale and widespread nature of this proposed wind farm development, with all the associated ancillary development that will be required, covering a vast area of central Shetland, and visible from a large percentage of our land mass and off shore coastal area.

#### **7.4.8 Cultural Heritage**

##### Changes in baseline conditions, impact evaluation, and wind farm design, as they relate to the historic environment

The section on policy context has been updated following submission of the Addendum although it is noted that there has been no material change in policy relevant to the application.

Additional maps and plans held in the National Archives of Scotland and the Shetland Archives have been consulted for the baseline assessment. Six additional cultural heritage sites were found and have been added to the Site Gazetteer (Appendix A13.1) and plotted on location plans (Figures A13.1 to A13.4). Two archaeological sites located within the proposed development area, omitted from the original 2009 ES (they could not be located during field survey in 2005), have also been included in the baseline data. Three further sites recently entered into the SMR have also been added.

Maps of archaeological potential have been produced in greater detail for the areas subject to potential direct impacts (Figures A13.20.1 to A13.20.5).

The methodology for indirect impact assessment has been revised with the submission of the Addendum, and (nationally important) sites assessed in the original ES as being subject to potentially significant impacts have been reassessed. The revised methodology is set out in Section A13.4. The Site Gazetteer in Appendix A13.1 provides a description of the sites themselves, with the factors defining a monument's setting and sensitivity being detailed in

Appendix A13.2, which refers to scientific, historic and social factors. Detailed discussion of the reassessment for the eight monuments specified by Historic Scotland in its objection is provided in Section A13.6.

The design of the proposed wind farm has it is recognised by the Planning Service been amended. Turbines D1, D2 and D3 (identified as having a potentially unacceptable impact on the setting of the monument at Graven) have been removed. Each of the remaining 32 turbines identified by Historic Scotland for removal or relocation has been considered with regards to its likely impact on the ability to understand and appreciate the significance of the monuments in their settings. The process is discussed in detail in section A13.7. The possibilities of relocating turbines D32 and D9 to reduce their potential impacts on the settings of Burravoe and Hill of Dale respectively were considered in detail. Ecological and ornithological constraints did not allow for the relocation of either of these turbines without causing significant impacts elsewhere. The access track at Newing in south Nesting has been deleted from the proposals, and there would now be no impact on Site 82 (a horizontal mill).

An Archaeological Management Plan designed to ensure the appropriate protection and investigation of archaeological remains in advance of and during construction works has been prepared (see Appendix A13.5). The necessary archaeological works would consist of seven components: appointment of an Archaeological Clerk of Works; walkover surveys to inform micro-siting of turbines and tracks in sensitive areas; demarcation of archaeologically sensitive areas; geophysical survey; archaeological trial trenching; archaeological watching brief; and archive deposition.

Viking Energy recognise that the proposed wind farm would '*alter the context in which the heritage of the Central Mainland is viewed*'. Due to this the Addendum includes a proposal for undertaking a major heritage programme as '*mitigation by compensation for alterations to the context in which heritage is viewed*'. This is referred to as 'The Neolithic Heart of Shetland Heritage Strategy'. A detailed outline of the strategy is provided in Appendix A13.6.

#### Historic Scotland's consultation response, 19 November 2010

Historic Scotland's comments relate to the likely impacts of the proposed development on those sites within its statutory remit. That is: scheduled monuments and their setting; category A listed buildings and their setting; and gardens and designed landscapes included in the Inventory.

Historic Scotland has confirmed that it is content that the proposed development is unlikely to have a direct impact on any sites of national importance.

Historic Scotland originally objected to the proposed development on the grounds that it would have a significant and adverse impact on the setting of the following monuments:

AOC Number	Scheduled Monument Number	Site Name
319	3469	Burravoe, chambered cairn and cairn 470m NE of
173	3524	Graven, chambered cairn 150m ESE of
83	3564	Hill of Dale chambered cairn
27	2038	Knowe of Bruland, cairn Laxo
291	5722	Hayfield, chambered cairn ESE of
328	3576	Crooksetter Hill, chambered cairn at SE summit of
327	3608	Crooksetter Hill, chambered cairn near NW summit of
313	3483	Skeo of Gossaford, cairn 400m W of

Having considered the information in the Addendum Historic Scotland is not maintaining its objection to the proposal.

It remains Historic Scotland's position that the proposal will have a significant impact on some of these sites. Historic Scotland believes that it may be possible to reduce the impact on two sites to an acceptable degree.

The removal of turbines D1, D2 and D3 and another 20 turbines (although not specifically removed on cultural heritage grounds) has assisted in reducing the impact on Crooksetter Hill chambered cairns, Knowe of Bruland and Skeo of Gossaford cairns to a 'minor' impact.

The potential impact on Burravoe, Graven, Hill of Dale and Hayfield chambered cairns remains significant in EIA terms, as follows.

In the case of Graven and Hill of Dale chambered cairns, the impact on the settings of these assets would be significantly improved by the removal or relocation of turbines D9, D10, D11 and D13. This could be achieved by the addition of an appropriately worded condition (see Annex 2 of letter for suggested wording). The locations of the other turbines within the vicinity of the monuments are accepted, as their increased distance from the monuments and their massing without D9, D10, D11 and D13 would render their impact on the setting of the monuments as 'minor'.

For the sites of Hayfield and Burravoe no mitigation is considered possible beyond the removal of the turbines identified in Historic

Scotland's previous response. It is the Planning Service's understanding that the applicant is unwilling to agree to the removal of these turbines. Historic Scotland acknowledges that this is a large development proposal and has sought to adopt a proportionate approach to seeking to mitigate its impacts. Although the effect of the proposal on these sites is major and would remain so were the development granted consent, Historic Scotland is not proposing to request that Ministers examine the impacts on these assets further. This is because the coastal elements of their setting would remain unaffected by the proposed development and there is a separation distance between the monuments and the turbines, which means that the impacts do not raise issues of national significance.

Historic Scotland is content that the indicative extent of the proposed borrow pit located in the vicinity of Hill of Dale chambered cairn is of a sufficient distance to not have a significant impact on the setting of this asset.

Historic Scotland disagrees with the conclusion in the Addendum that the implementation of the proposed mitigation measures would result in an overall 'minor' residual impact on known archaeology. It does not consider that the specific measures for cultural heritage (being the removal of turbines D1, D2 and D3) are sufficient to justify this conclusion.

#### *Evaluation of methodology and assessment criteria used*

Historic Scotland considers that the methodology within the Addendum employs a narrow interpretation of setting. Setting is more than 'designed-in sightlines'. On this basis it does not agree with certain aspects of the methodology used in the ES to determine the setting of monuments and the impact on that setting from the proposed turbines.

Historic Scotland maintains its position that the extent to which a scheduled monument is visited has no bearing on its cultural value/significance. The criteria of monument amenity value is not relevant in the assessment as the primary purpose of scheduling is not to give any additional rights of public access.

#### *The Neolithic Heart of Shetland Heritage Strategy*

Improved access and investigation, while valuable within the framework of an appropriate Research Strategy, does not mitigate the significant impact on the cultural value of the four scheduled monuments referred to above. Excavation to destruction is not considered to be 'mitigation' for impact on setting.

Historic Scotland agrees in principle with the proposal for some compensatory action as regards the cultural heritage strategy, but does not believe that this should be set out within the ES to the level of detail currently proposed.

The proposed heritage strategy appears to presume consent to excavate scheduled monuments, with no acknowledgement of the

consenting regime involved. Within the excavation proposal, there is insufficient mention of post excavation provision or publication routes to satisfy granting Scheduled Monument Consent. Similarly there is substantive detail on outreach and interpretive programmes that will clearly require infrastructure and sustainable management. Further details of how this would be supported would be required.

Historic Scotland does not agree to *The Neolithic Heart of Shetland Heritage Strategy* as contained within the Addendum.

Historic Scotland has asked for a condition to be included on any consent, requiring agreement on the scope of a strategy that would enable the delivery of a programme of compensatory works that would involve Historic Scotland (both as a partner in the development of the research agenda and in its statutory role as regards consent for scheduled monuments) and the Local Authority's archaeological services. Recommended wording is given in Annex 2 of Historic Scotland's letter

Regional Archaeologist's consultation response, 10 November 2010

The Regional Archaeologist has recommended a number of conditions in relation to the Archaeological Management Plan (Appendix A13.5). The Planning Service believes it would be most appropriate to deal with these suggested amendments as a single condition requiring an amended management plan to be submitted for approval similar to what has been proposed by Historic Scotland for the Heritage Strategy.

The Regional Archaeologist has asked to be involved in the development of the Habitat Management Plan (Appendix 10.9). This is to ensure that the historic environment is fully considered in any proposals.

The conclusion in the Addendum that there would be 'no direct impacts on known archaeology' and 'the effects on known archaeology would be minor' requires qualification in the opinion of the Regional Archaeologist. Until an intensive walkover survey has been completed the level of known archaeology does not in her view constitute a complete record. Any remains that are found during this work will she says be of no less potential importance than that which already exists in the Gazetteer.

The lack of baseline data currently available she advises means that the maps of Archaeological Potential can not be realistically drawn up until this work has been completed.

The Regional Archaeologist disagrees with the conclusion in the Addendum that 'there would be no significant impacts on the settings of individual nationally important monuments'. The original assessment concluded that there would be a 'significant' impact on the settings of several scheduled monuments. Since then only minor amendments have been made to the design of the wind farm (only 3 of the 35 turbines suggested for removal or relocation by Historic Scotland have been deleted from the proposals). Instead, the national significance of some monuments appears to have been

downplayed by suggesting that they are now eroded or damaged due to visitor pressure and that this has happened recently. In the reassessment of significance undertaken as part of the Addendum those sites that under the original assessment were deemed to experience a 'major' or 'moderate (and therefore significant under the EIA Regulations) impact on setting have now been re-assessed as experiencing a 'minor' or 'negligible' impact. The Regional Archaeologist does not concur with this conclusion and is of the view that the 'revised descriptions misrepresent the truth and that the revised photographs in the Addendum are presented in such a way as to prejudice opinion related to the monuments'. Site descriptions prepared by the Regional Archaeologist are included as an appendix to her comments.

The Regional Archaeologist disagrees with the statement in the Addendum that 'there would be no significant, irreversible direct impacts on cultural heritage caused by the Viking wind farm'. Archaeology is a finite resource and any disturbance to it causes an irreversible impact. Changes to hydrology, even in a minor way, will impact on the preservation of archaeological information.

The Planning Service confirms its understanding that the Heritage Strategy requires significant revision. While welcoming the applicants' proposal to invest in public access to archaeology, archaeological sites are a finite resource and the primary concern of the heritage legislation is the desirability of preservation in situ. Furthermore, a number of these sites are scheduled, and it is generally considered that scheduled monuments should never be excavated other than as part of a robust research project, and even then the need for excavation should be balanced against the need to preserve sites for the future both for enjoyment and for investigation when scientific techniques have advanced. Scheduled Monument Consent would be required for the excavations of these monuments and it is the Planning Service's belief that it would be unlikely that it would be granted on such a scale.

#### **7.4.9 Noise/Vibration**

##### Noise

According to the Non-Technical Summary (NTS) to the Addendum, both the construction and operational phases of the proposed development were considered in the applicants' assessment of noise impacts.

Noise post construction is generated aerodynamically from the effect of wind passing over the rotating turbine blades and mechanically from the moving parts of the turbine such as gearboxes and generators. As the noise output of turbines is a function of wind speed, the original 2009 ES considered the proposal layout of 150, 3.6 MW turbines across a wind speed range of 4 to 12 metres per second.

##### Operational Phase

The 2009 ES states that 'experience at existing wind farms suggests that operational noise is unlikely to be a significant issue at distances

of greater than 1 km from turbines' (ES (2009) Ch.12.2.2(a). The study area included residential properties up to 1.5 km from the nearest turbine.

Predicted operational noise impacts were undertaken in accordance with the noise limits described in ETSU-R-97 (Assessment and Rating of Noise from Wind Farms) and the published recommendations of the Working Group on Noise from Wind Turbines, as referred to in PAN45 (Renewable Energy Technologies).

ETSU-R-97 proposes separate noise limits for night-time (to prevent sleep disturbance) and the recreational period of daytime known as 'quiet daytime' (to protect residential amenity). As noise from operational wind turbines vary with wind speed, ETSU-R-97 limits relate to background noise levels across a range of wind speeds, subject to lower noise thresholds during assessment periods.

Background noise levels were originally undertaken at sixteen noise receptors surrounding the proposed development site over a two-week period. However, only six noise receptors were located in the final study area. Predicted noise levels at all receptors were below the lower ETSU-R-97 night-time limit, and within the quiet daytime noise limits. As a result, the applicants state that 'no significant noise impacts are predicted as a consequence of the operational phase of the development'.

#### Construction Phase

In relation to the construction phase of the proposed development, construction noise levels and impacts will vary depending on the location of works, the plant use and upon the actual construction activities being undertaken. For instance, the mechanical noise of track and cable laying and mobile plant operations, in conjunction with borrow pit operations including drilling, blasting, crushing and excavation works, laying of turbine foundations etc all have a high potential to generate noise disturbance.

The applicants acknowledge that as the full extent of the construction activities are not yet known, 'the assessment of construction noise impacts was undertaken based on experience of construction activities on other wind farm sites by using sound power data for construction plant'. This information was obtained from plant manufacturers and other published data sources.

Construction noise level predictions were undertaken at receptors that were situated within 1.5 km of a turbine or borrow pit in accordance with BS5228 (Noise and Vibration Control on Construction and Open Sites).

The 2009 ES predicted that construction noise levels at six receptor locations were above the PAN50 (Controlling the Environmental Effects of Surface Mineral Workings, Annex A: The Control of Noise at Surface Mineral Workings) derived construction noise limits as a result of operations at proposed borrow pits. In initial response, the applicants stated that the borrow pits are small and will provide

aggregate material for the purposes of laying tracks to achieve access into the sites. They anticipate that the duration of such activities at the borrow pits will be short and that works here will be restricted to appropriate daytime hours in attempts to minimise disturbance. Because predicted noise levels for construction activities at other receptors were below the derived noise limits, the applicants state that 'no significant noise impacts are predicted'.

The subsequent reduction of turbines/borrow pits following on from the submission of the Addendum has reduced this figure, but three receptor locations that are still predicted to be over the 55db level at Oversound, South Nesting and Southtown. The applicants state that 'noise predictions assume a worst case scenario of all equipment operating simultaneously, at the edge of the "area of search", and with no accounting for attenuation due to soft ground or screening.' (Addendum, A12.6.2, p. A12-8). They also claim that 'in reality it is likely that noise levels would be below those predicted'.

#### Decommissioning Phase

Noise effects from the process of decommissioning have been scoped out of the 2009 ES as it is considered to be of a similar nature to construction phase issues, but of a smaller scale and shorter duration.

#### Vibration

The 2009 ES states that 'possible vibration effects have been scoped out of this assessment' (ES (2009), Ch.12.2.1, p.12-1) as 'vibration effects from wind turbine operations are not generally considered to be a significant issue' (ES (2009) Ch. 12.2.5, p.12-5). Thus, the 2010 Addendum does not address vibration issues either.

However, according to the 2009 ES, other operational noise effects or phenomena such as infrasound, low frequency noise and amplitude or aerodynamic modulation (AM) assessments have been based upon reviews of relevant literature.

#### Low frequency noise and infrasound – impact magnitude

The ES states that modern turbines (such as those proposed for the development under consideration) 'have their blades upwind of the tower thus reducing the low frequency noise to below the threshold of human perception' (ES (2009) Ch.12.17(b), p.12.25). Leventhall and Leventhall et al (2003/4) assessed the likely levels of low frequency noise at receptor locations, 600 metres from a proposed site of five 1.3MW turbines and concluded that 'noise from the proposed installations in the low frequency (10Hz to 200Hz) range is unlikely to be a problem', whilst the ES states that larger turbine measurements 'have shown levels of infrasound to be below audibility'. The applicants consider that as their proposed turbines are much further from properties than any of the case studies reviewed, 'it can be concluded therefore that low frequency noise will not result in perceptible impacts at the proposed site' and therefore they consider that 'no significant effects will result'.

According to the ES, 'a study (Styles et al, 2005) [12] was undertaken into low frequency vibration with respect to the siting of wind farms and possible effects of the operation of the UK seismological array located at Eskdalemuir in southern Scotland', which 'included vibration measurements arising from the existing Dunlaw wind farm in the Scottish Borders' (ES (2009) Ch.12.17(b), p.12-25 & p.12-26). Yet the study 'did not examine human response to either low frequency noise or vibration from wind turbines' but stated that at 'ground vibrations with amplitudes of about one millionth of a millimetre .../... there is no possibility of human beings sensing the vibration and absolutely no risk to human health'. The DTI concurred with this viewpoint after undertaking a 2006 study to investigate claims that infrasound or low frequency noise emissions from wind turbines were causing adverse health effects by concluding that 'there is no evidence of health effects arising from infrasound or low frequency noise from wind turbines'. As a result of such published research, the applicants consider that 'no perceptible impacts are predicted, therefore no significant effects will result'.

However, a study undertaken by acoustic experts at the University of Groningen in the Netherlands claims that 'measurable, low-frequency noise is present and is relevant to the audible noise nuisance often reported' ([http://www.bwea.com/ref/lfn\\_keelee.html](http://www.bwea.com/ref/lfn_keelee.html)). A study of the Dunlaw wind farm found that when the 60 metre turbines start to generate electricity, even at low wind speeds, vibrations can be picked up as far away as 10km.

Whilst earlier studies concluded that there was no significant risk to health or scientific evidence to suggest that wind farm vibrations affect human health, representations suggest that research and studies are dated and refer to older, much smaller turbines than those actually used today. They state that the guidance contained within ETSU-R-97 (The Assessment and Rating of Noise from Wind Farms) is over ten years old and refers to a previous generation of much smaller turbines. They claim that as more modern wind turbines are in excess of 100m in height (significantly larger than those at Dunlaw), that further investigation based on up to date evidence to establish impact levels caused by vibration is vital. Yet it may in the Planning Service's view take an inordinately lengthy period of time to achieve accurate data that assesses and reveal the true extent and impacts of wind turbine generator emissions

According to previous studies at Risoe DTU (Denmark), low frequency noise (LFN) for downwind rotors has been investigated using a 3.6MW model, where it was found that 'unsteadiness of the flow behind the tower contributed significantly to the total LFN sound pressure level' (Madsen) by as much as 20 dB. Present projects investigated the causes of LFN for upwind rotors where it was found that a number of important turbine design parameters would influence LFN i.e.:

- Rotor rotational speed
- Blade/ tower clearance
- Rotor configuration - upwind/downwind
- Unsteadiness/turbulence inflow

The level of LFN emissions generated by wind turbines varies between models and is entirely dependent on the above parameters identified. The applicants' figures have also been based on the Siemens 3.6 MW turbine, but no final type/ model of turbine has actually been selected for the proposed wind farm development. Such parameters should be given careful consideration in order to ensure that sound pressure levels are minimised.

#### Aerodynamic Modulation

The 2009 ES also contains a section on assessing the impact magnitude of aerodynamic modulation (AM). It is stated that that Salford University were commissioned by the DTI to investigate historical complaints in relation to AM. Their study has concluded that 'AM cannot be fully predicted' (ES (2009) Ch.12.17(c), p.12-26) but states that complaints in relation to AM were low, with less than 4 operational wind farms out of 133 experiencing problems in this respect. Three out of the four cases of complaint were resolved due to remedial action, whilst a further case remains under investigation. According to the ES, a Government Statement on AM states that this situation will remain under review, but does not consider that there is to be a 'compelling case for further work on AM'. Again, as a result of this published research, the applicant considers 'that the likelihood of AM occurring at the Viking wind farm is low' and as such 'no significant effects are therefore predicted'.

Whilst such conclusions have been based upon some recent published research, the Planning Service has identified that there remains much debate and concern between acoustic experts about the magnitude of effects that result from wind turbine vibration, lower frequency noise, infrasound, tonality, amplitude etc.

Despite anticipated predictions that 'no significant effects' will occur in this respect, the Planning Service would advise that it is impossible to calculate a predicted level of impact until further future studies, research and monitoring is undertaken of existing or future wind farms (containing the same turbine models i.e. kw, height, blade length and diameter and of a similar scale in number of operational turbines) which will take time to assess, or establish actual levels and impacts until the proposed wind farm itself is fully operational and appropriately monitored throughout its life expectancy.

#### Summary (Noise and Vibration)

According to the applicants, 'no substantive objections' were received in relation to noise impacts' (Addendum Overview, Ch.A1.3.11, p.A1-12) and as a result, no further consideration of its effects throughout the operational and construction phases of the proposed wind farm have been provided in the Addendum.

The Addendum states:

'the reduction in the total number of turbines (150 to 127) resulted in a reduction in the overall operational noise levels (NTS-17), whilst 'the reduction in the number of turbines and borrow pits proposed has .../... led to an overall reduction in construction noise levels'. Although 'no specific noise limits exist for construction noise .../... noise limits were derived with reference to .../... planning guidance for the quarrying industry.'

Three receptor locations were above the derived construction noise limits as a result of operations at borrow pits located close to these receptors. However, the applicants state that these particular borrow pits are small; would provide aggregate material for initial track laying to access the site and that the duration of activities at these borrow pits would be short and restricted to appropriate daytime hours to minimise disturbance. 'Appropriate mitigation measures would be adopted to further reduce noise impacts at the identified receptors' .../... 'to minimise noise impacts as much as possible' (Addendum - Mitigation Ch.20.5) by:

- Locating equipment to minimise noise impacts, maximising natural screening;
- Undertaking appropriate phasing of the works, equipment to be employed, working hours and use and control of blasting;
- Using quietest plant and deploying or moving plant at appropriate times;
- Undertaking appropriate scheduling of operations where noise and vibrations may have an adverse effect;
- Undertaking training and supervision of operatives; and
- Undertaking efficient operation and maintenance of plant.

Whilst all initial concerns raised by Environmental Health have been responded to via mitigation, it still has concerns about the operational noise levels of the proposed development at North Nesting and Sandwater, as noise levels have not been reduced, but increased background noise levels have been used to provide new calculations in the Addendum. They state that 'background noise monitoring measurements now being used in the vast majority of instances' is 'greater than those used in the 2009 ES' – a difference of 10dB in some cases which is 'unrepresentative of the general background levels'. As a result, they have requested that in regard to operational noise, mitigation measures be put in place by the developer and via planning conditions to reduce noise levels at sensitive locations in North Nesting and Sandwater in line with ETSU requirements by utilising the background noise levels contained within the 2009 ES.

Despite the applicants considering that there will be 'no significant noise impacts', such measures cannot be fully predicted and are dependent on the type and model of turbine installed.

It is pertinent to assume therefore, that a certain degree of vibration will occur during the operational phase of the turbines and particularly during the construction phase of the development i.e. in constructing new access roads; due to heavy vehicular activity and

movements and at borrow pits via various construction methods such as ground excavation/digging/drilling equipment.

Blasthole drilling can cause excessive noise, vibration and dust at nearby properties, particularly when carried close to the site boundary and at or near ground level'. Thus such operations are very likely to cause ground vibrations.

#### **7.4.10 Air Quality**

The changes proposed in the Addendum that affect air quality are mainly down to the reduction of turbine bases and the numbers of borrow pits. There will be 7 compounds instead of 8 as originally proposed. These changes will reduce the impact in relation to potential dust particulate entering the atmosphere.

The reduction in track length and turbine numbers also reduces the amount of on-site buried cabling required, from about 118 km to about 104 km. "Compared with the 2009 proposals, the area which may be disturbed during construction activities is reduced from about 314 hectares to about 232 hectares. After construction is complete, the area which would be permanently affected amounts to about 104 hectares" (VE 2010). The reduction of track will mean reduced tipping and vehicular movements, with further potential to reduce potential amounts of dust particulate entering the atmosphere.

Reducing the length and width of tracks servicing the turbines is the other big change in relation to possible air pollution via dust particles, though this will have less impact on air quality in terms of materials to be used, than the changes noted above. However, the removal of materials to reduce the tracks down to single track may have a negative impact on air quality due to the materials having to be moved from site.

This reduction in track sizes as stated within the Addendum, will also need to be controlled via dust suppression methods. The initial tipping of materials for the roads then the subsequent removal of the materials to reduce the double track roads to single, should be included within the dust and particulate suppression methods and conditioned appropriately within any consent granted.

To give an idea regarding areas to be excavated, the applicants state that concrete volumes required for the revised development have been estimated to be 62,897m<sup>3</sup>, primarily to form turbine foundations. This is a reduction of 11,355m<sup>3</sup> from the originally proposed 150-turbine layout.

The Addendum addresses related and pertinent points raised by the RSPB and Environmental Health (EH). The use of chemical wheel wash solution and the use of quick growing plants on exposed surfaces have been addressed and has been removed from the proposal in the Addendum. Dust suppression methods stated within the original ES under Chapter 16 Air and Climate part 16.8.1 Air Quality Mitigation are the Planning Service feels adequate, and this is confirmed by EH's comments. It is appropriate that submission of

a dust suppression and monitoring management plan should be made the subject of a condition of any consent granted, to be agreed by the Planning Authority in writing following consultation with EH, with conditions attached to EMP (wheel washing, dampening down of excavation and tipping sites, covering of truck loads etc). The use of mobile rock crushing plant has not been assessed, as this is not in the ES or the Addendum; the use of rock crushing plant should therefore be conditioned in terms of its proposed location and hours of use.

Related conditions that the Scottish Ministers may decide it appropriate to attach to a consent for deemed consent should in the Planning Service's view follow the proposed mitigation method set out in the ES under chapter 16 Air and Climate part 16.8.1 Air Quality Mitigation, with the inclusion of the latest amendment mentioned above.

#### **7.4.11 Carbon Payback**

The applicants state, "The release of greenhouse gasses, in particular carbon dioxide (CO<sub>2</sub>), is one of the main causes of climate change. (UNFCCC, 2009)" (ES 16.1)

A proposed method for measuring the Carbon Payback period for a wind farm development on peat soils requires making an estimate of the Carbon released by the following activities:

"Carbon emission savings from a wind farm are estimated with respect to emissions from different power generating sources, loss of Carbon due to production, transportation, erection, operation and dismantling of the wind farm, loss of Carbon from backup power generation, loss of Carbon fixing potential of peat land, loss of Carbon stored in peat land (by peat removal and by drainage of the site) and Carbon saving due to restoration of habitat." (Calculating carbon savings from wind farms on Scottish peat lands - A New Approach" Nayak, D. et. al (2008) Pt. 9)

The savings made through reductions in carbon released due the wind farm's electricity generation as opposed to other generating sources are then offset against the carbon released by its construction, operation and decommissioning. The time taken to achieve these savings is defined as the carbon payback period.

In its response to the Addendum SEPA states:

"The Scottish Government has written to SEPA to ask us to audit carbon balance calculations for Section 36 windfarm applications on peat, although the precise remit is yet to be agreed. We recognise the importance of this issue and the need to assist delivery of Scottish Planning Policy. We expect to have an agreed framework for providing advice, supported by good practice guidance, in place by 1 April 2011. In the interim, we recommend that this aspect be considered closely by the determining authority itself as this is the main benefit from renewable energy projects. We do note that the

recalculated carbon payback periods have been significantly reduced and that the Addendum states that the work carried out has been reviewed by The Macaulay Land Use Research Institute.”

In its response to the Addendum SNH states:

“Although not formally within our remit, we note that many of the shortcomings of the Addendum in respect of peatland, including the reliance on untried and tested habitat management measures, may have consequences for the accuracy and reliability of the analysis of carbon balance. The Scottish Government may wish to consider this further.”

The full environmental impact in terms of the issue of carbon emission losses and savings in relation to the development (both individually and in combination (or cumulatively) with other developments being proposed) is, as yet, undeterminable. The Scottish Government has asked SEPA to undertake this assessment for s36 applications; the Planning Service cannot reasonably arrive at a conclusion on that judgement without the results of those assessments being placed at its disposal.

#### 7.4.12 **Socio Economic**

In terms of socio-economic benefit, the applicant has stated the following:

“The revised model suggests the wind farm will create an average of 42 new operational jobs directly per annum (960 job years), and generate at least another 23 in support services (538 job years) through local expenditure, as well as produce £12.7m of direct output and £18.8m of gross output per annum in the local economy. This is in addition to the impact during the five year construction phase of around 174 direct jobs per annum in Shetland, £4.4m per annum in direct income (wages) and £11.7m per annum in direct output during the construction phase that will go into the local economy.

If the income from land rental, community levy and local profits is taken into account the wider economic benefit to the Shetland community of the operation of the wind farm is likely to result in a direct annual income to Shetland of £38.2m, and the creation and sustaining of around 430 gross jobs per annum over the 23 year life of the project. This is in addition to around £10.9m to local suppliers of direct income, and the creation and sustaining of 285 gross jobs per annum over the 5 year construction period. The total value of all income to Shetland, arising from both construction and operation phases, is expected to be in the order of £930m.

The wider economic benefits arise from effects not picked up by conventional impact analysis, and include the investment made possible from the profits and income generated. It is estimated this could result in around 370 jobs being sustained over the life of the wind farm, with the potential for more from

investment in new development projects. The eventual total could be even higher due to the cautious assumptions used regarding the level of local investment from resources available.”

A number of representations have raised socio-economic issues including financial risks, market uncertainties and negative impacts upon existing industries, including tourism.

Whilst it is acknowledged there is a potential for significant income, the Planning Service is not in a position to assess the applicant’s calculations or the negative impacts described.

The Planning Service has not assessed the economic impacts of this development as that is a political perspective and not within planning policy guidelines.

## **8. Financial Implications**

8.1 There are no financial implications.

## **9. Conclusions**

9.1 The Shetland Structure Plan GDS1 (Sustainable Development) states that development will be planned to meet the economic and social needs of Shetland in a manner which does not compromise the ability of future generations to meet their own needs and to enjoy the area’s high quality environment. All development must therefore protect environmental assets as defined in the Structure Plan and Local plan, use and conserve resources wisely, and minimise environmental impacts.

9.2 The balance that has to be considered is whether the resultant visual intrusion and potential environmental impacts are considered to be acceptable because of any perceived environmental, economic and social advantages that the development may bring.

9.3 Whilst the Planning Service believes that the development of a wind farm of significant scale could comply with the Development Plan, the applicant has not demonstrated that this development could be undertaken without unacceptable environmental impact. Therefore it is the Planning Service’s conclusion that the proposal, as it stands, is contrary to the Development Plan.

9.4 It is recommended that Scottish Ministers take account of the precautionary principle as set out in paragraph 132 of SPP 2010, which states: "Planning authorities should apply the precautionary principle where the impacts of a proposed development on nationally or internationally significant landscape or natural heritage resources are uncertain but there is sound evidence for believing that significant irreversible damage could occur. Where the precautionary principle is justified, modifications to the proposal which would eliminate the risk of irreversible damage should be considered. The precautionary principle should not be used to impede development unnecessarily. Where development is constrained on the grounds of

uncertainty, the potential for research, surveys or assessments to remove or reduce uncertainty should be considered."

- 9.5 The Planning Service has not assessed the economic impacts of this development as that is a political perspective and not within planning policy guidelines.

## 10. Policy and Delegated Authority

- 10.1 The Council has previously determined (in terms of the decisions on the reports referred to at paragraph 1.11) that it will be the constituted body which will decide on a response to the Energy Consents Unit regarding this application.

## 11. Recommendation

- 11.1 I recommend that the Council object to the proposed development because it is contrary to Policy GDS1 of the Shetland Structure Plan (2000).

## 12. Background Papers

- 12.1 The Viking Energy submission is available in the Members Room as:

The 2009 application folders and plans.  
The 2010 Addendum folders and plans

- 12.2 Letters with representations received from the following:

### Support

Mr Chris Bunyan Da Broch Gruting, Bridge of Walls  
Mr Andrew Wills Gorie, Bressay  
Ms Cavy Johnson Carbury Aithsetter, Cunningsburgh  
Mr D Thompson Hillcrest, Burravoe, Yell  
Mr & Mrs G Henderson 26 Longlands, Upper Sound, Lerwick  
Ms Sandra Jamieson Fourwinds, Cullivoe, Yell  
Mr Andrew Scott Pelamis Wind Power Ltd 31 Bath Road, Edinburgh

### Objection

Ms Genevieve Jones (E-mail supplied)  
Mr S Lawrence Seaview, Eshaness  
Mr R Rowland Vaila Hall, Isle of Vaila  
Mr & Mrs John Morrison Setter, Weisdale  
Mr B Williams Da Moors, Skellister, South Nesting  
Mr & Mrs I Malcolmson Grunnabreck, Newing, Skellister  
Mr Dean Mitchell Sungaets, Nesbister, Whiteness  
Mrs Annabel Cheyne-Smith 1 Lingaro, Bixter  
Mr Victor Drosso Brig House, Weisdale  
Mr R Dawson Grundal, Kirkabister, Vidlin  
Dr Maggie Keegan Scottish Wildlife Trust, Crammond House, 3 Kirk Cramond, Edinburgh  
Mr Gordon Carle Carlesburg, Upper Sound, Lerwick  
Mr Paul Featherstone Kergord Hatchery, Weisdale

Mrs Rita Carle Carlesburg, Upper Sound  
Mr Andy Sandison Hillbank, Hillhead, Lerwick  
Mr Mark Chambers Solsken Tua, Setter, Sandwick  
Ms Dorota Rychlik Vaila Hall, Isle of Vaila  
MT Drosso Brig House, Weisdale  
Mr B Gregson Shetland Amenity Trust, Garthspool, Lerwick  
J A Edmondston Bunes, Baltasound, Unst  
Mr David Anderson Houser, Tingwall  
Mr Ian Kelly Graham & Sibbald, 3 Charlotte Street, Perth, for  
Sustainable Shetland  
Mr D Edmondston Bunes, Baltasound, Unst  
Mr Paul Nicolson Lonabrek, Aith  
Mr & Mrs RJ Johnson Loaxobiggin, Graven, Mossbank  
Mr James Nicolson The Anchorage, Voe  
Mrs EM Jehu Mahouse, Quarff  
Mr Nick Brett Anderville, Walls  
Mr Colin Wiseman (E-mail supplied)  
Delano Jennings 12 Voderview, Lerwick  
Mr David Anderson 62 Sandvein, Lerwick  
Ms Geraldine Jennings 10 Chromate Lane, Lerwick  
Mr & Mrs J Henry 11 Voderview, Lerwick  
Mr David Henderson 2 Hoofields, Lerwick  
Mrs Caroline Henderson 2 Hoofields, Lerwick  
Mr R Nicolson Mervue Aith, Bixter  
F Leask 86 Whitelaw Place Collingwood Chase, Cramlington

- 12.3 Consultation responses (internal and external).
- 12.4 Transcripts of a series of public meetings held to hear the views of the general public on 28, 29 and 30 September and 1 October 2009 in Brae Hall, Aith Public Hall, Dunrossness Public Hall and Lerwick Town Hall. The transcripts of those meetings have also been copied to the Energy Consents Unit.
- 12.5 Land Use Consultants (March 2009) Landscape Sensitivity and Capacity Study for Wind Farm Development on the Shetland Islands - A Report to Shetland Islands Council – reported to Planning Board for information 22 April 2009 (Min Ref 27/09).

Report Number : PL-44-10-F

**Relevant dates regarding Section 36 Application for the Proposed Viking Energy Wind Farm, various locations in Mainland, Shetland**

19 May 2009 - Viking Energy submitted an application under section 36 of the Electricity Act 1989 for the Scottish Minister's consent to construct and operate the proposed Viking Wind Farm, including asking for a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 that planning permission for the development be deemed to be granted (i.e. permission granted for the development with government authorisation).

22 May 2009 - First of two required Statutory Adverts appear in press, including the Edinburgh Gazette and Shetland Times. The public was advised that representations needed to be made not later than 30 June.

27 May 2009 - Scottish Government's Energy Consents Unit (within Business, Enterprise & Energy Directorate) formally consulted the Council, stating that the closing date for representations for the Council was 30 September 2009.

29 May 2009 - Second of two required Statutory Adverts appeared in the press. (NB In response to requests from the public and pressure exerted, including by MP & MSP, the period for representations to be lodged with Energy Consents Unit was extended until 28 July 2009, with there being further Statutory Adverts placed in the press.

15 July 2009 – Shetland Islands Council decided that its response to the application would be the subject of a dedicated debate by the full Council, and that a series of public hearings would be held before the full Council convened to decide its response to the Energy Consents Unit's consultation. Also it was determined that to allow time for the extended public consultation exercise to take place the Council would write to the Energy Consents Unit to ask that the period within which it had to make a response be extended by three months.

30 July 2009 - Energy Consents Unit confirmed an extension of the Consultation period for the Council from 30 September to 13 November 2009.

7 August 2009 - First of two required Statutory Adverts appeared in press in respect of 'additional information' submitted to the Energy Consents Unit comprising a 'Planning Statement' prepared by the applicant and responses to the initial consultation made by SNH and SEPA. The public was advised that representations to these had to be made not later than 16 September.

11 August - Shetland Islands Council completes its distribution of copies of the 'additional information' as part of a re-consultation, requesting responses within 21 days.

14 August 2009 - Second of required Statutory Adverts appear in press.

28, 29 and 30 September and 1 October 2009 Public Consultation Meetings held by the Council to hear public views about the Viking wind farm in Brae Hall, Aith Public Hall, Dunrossness Public Hall and Lerwick Town Hall. The transcripts of those meetings were forwarded to the Energy Consents Unit on 15 April 2010.

7 October 2009 Viking Energy issued a statement to the press to the effect that it would be submitting an addendum to its application “in the turn of the year” (its phrase).

8 October 2009 the ECU confirmed that the developer agreed an extension to the consultation until 28 days after the date on which the addendum notice is last published in one or more local newspapers (such date being determined by the date that the developer submitted the addendum).

9 October 2009, the ECU asked the Planning Service to confirm that it would not now be providing advice on 13 November 2009 and the reason for that. We wrote to the ECU on 12 October 2009 and confirmed that the Planning Service would not be submitting advice on the above proposed development on the 13 November 2009, as previously intimated due to Viking Energy’s announcement of its intention to submit an addendum to its previously deposited proposals.

19 October 2009 the ECU notified the Planning Service that the developer had agreed to an extension for our consultation response.

1 October 2010 Viking Energy Partnership submitted the Addendum to the applications for the proposed Viking wind farm. First of two required Statutory Adverts appeared in the press.

8 October 2010 Second of two required Statutory Adverts appeared in the press.

5 November 2010 4-week consultation period for the general public ended.

19 November 2010 6-week consultation period for statutory consultees ended. N.B. SNH sought, and was granted, an extension for the submission of its comments until 26 November 2010.

14 December 2010 Shetland Islands Council meeting to debate its response to the application for consent under s36 of the Electricity Act 1989 for the Scottish Minister’s consent to construct and operate the proposed Viking Wind Farm.

18 December 2010 Final date for receipt by ECU of Shetland Islands Council’s opinion on the proposed development.

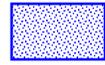


# Map 4 : Broad Areas of Search

## SHETLAND ISLANDS

### Key

Areas to be Afforded Significant Protection



Areas of Likely Significant Constraints



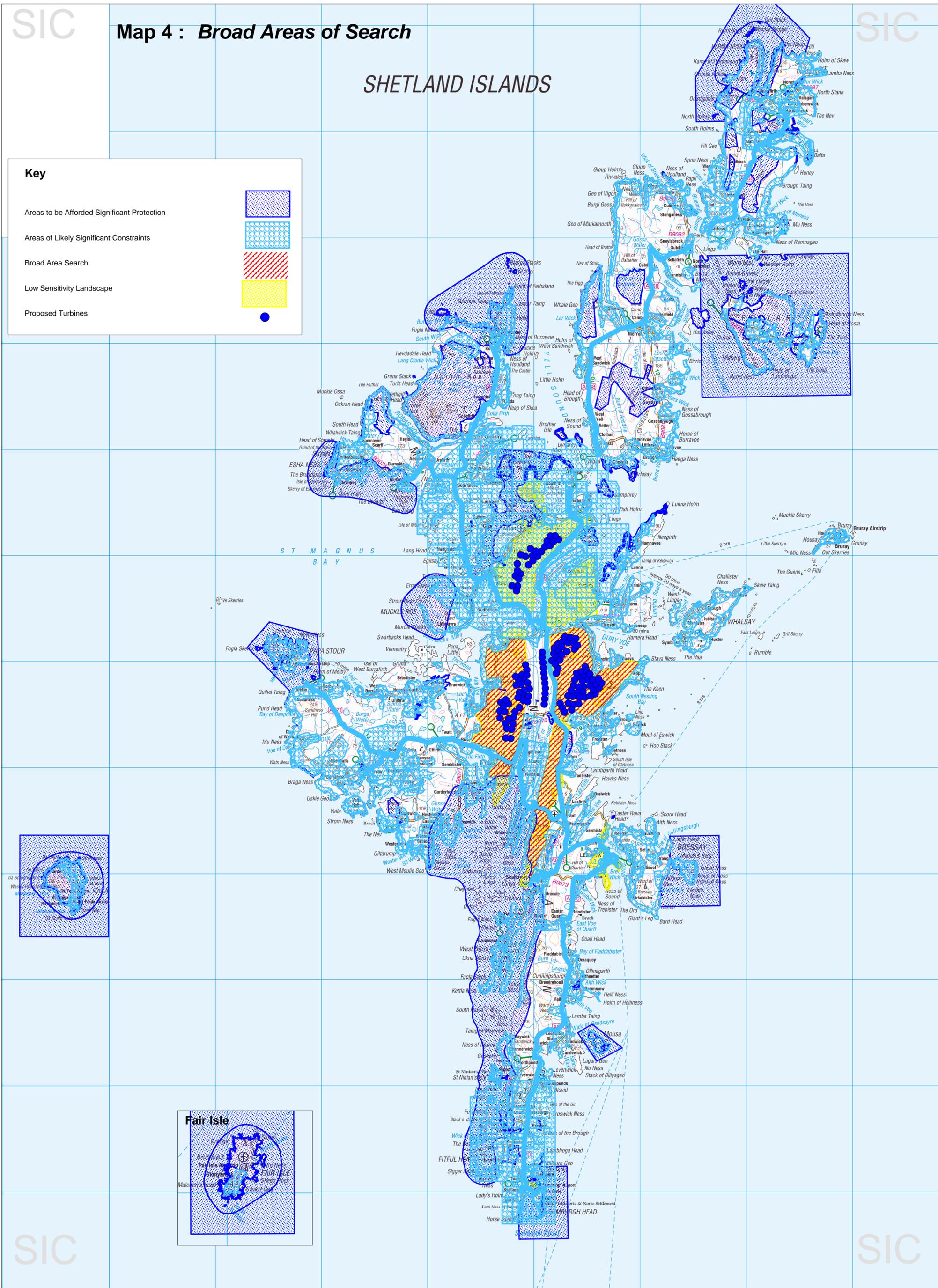
Broad Area Search



Low Sensitivity Landscape



Proposed Turbines





**Shetland Islands Council – 14 December 2010**  
**Consultation on Section 36 Application Etc on the Viking Windfarm**  
**PL-44-10-F**

**Addendum to Section 7.4.5**

Ornithology

The 2010 Addendum contains a much expanded chapter on ornithological interests providing more detailed analysis on, *inter alia*, collision risk calculations and disturbance due to operational activities. Submissions on this subject have been made by Scottish Natural Heritage, the Royal Society for the Protection of Birds and the Shetland Bird Club.

These impacts as assessed by the applicants have been determined using standard wind farm assessment methodologies but this introduces an element of uncertainty as they have been developed for much smaller wind farm developments at sites with less diverse and dense avian communities. Different analytical methods have also been used in the 2010 Addendum compared to the 2009 ES and it is unclear as to whether the benefits identified are due purely to the removal of 23 turbines or the different analytical approach or a combination of the two.

There is a heavy reliance on proposed mitigation measures, such as habitat restoration and management as set out in the Habitat Management Plan, offsetting any predicted impacts on all bird species. There is little account taken of impacts on the birds present in those areas identified as suitable or appropriate for restoration.

For a number of the bird species discussed there is an assumption that, because a species is considered to be at 'favourable conservation status', there is some spare capacity within the population such that a low level of mortality (due to collision for example) can be absorbed without any effect on overall population numbers. This is something of a simple assumption and the arguments presented to support this are not wholly convincing. For some species there is insufficient data available to hand that allows confident determination of population trends (annual counts over a 4 – 6 year period would normally be required to determine a trend) and as such assumptions that species are in favourable conservation status is uncertain.

None of the data presented for operational disturbance, and any associated collision risk, has factored in the additional impact that would come from opening up and operating 12 of the 13 potential borrow pits. As borrow pit working will involve drilling and blasting of rock and some pits are within 500m of lochans used by divers this is an oversight.

SNH objected to the original 150 turbine development on the grounds of impact on a number of Annex I and II bird species. Whilst remaining concerned about adverse impacts on those species of regional conservation status, they are maintaining their objection in respect of impacts on the favourable conservation status of the national population of whimbrel. This species is in decline for reasons that are not fully understood and SNH considers that the Addendum underestimates impacts with regard to disturbance, displacement and collision mortality. They maintain there is

sufficient evidence to justify application of the precautionary principle as required by Scottish Planning Policy (2020)(paragraph 132).

Along with the RSPB and the Shetland Bird Club, SNH feel there is a degree of uncertainty in the proposals within the Habitat Management Plan achieving the predicted benefits as the habitat associations for some species are poorly understood. Whilst welcoming the reduction in turbine numbers as a means of reducing losses in bird numbers, the RSPB consider that mitigation can only be achieved by removing those turbines from the areas with the highest density of key species, for example the Lang Kames, rather than relying solely on the HMP.

Head of Planning  
Infrastructure Services Department

## **Consultation on Section 36 Application etc on the Viking Wind Farm**

### **Briefing note from Head of Economic Development on the economic importance of the project (and related Transmission Grid Connection) to Shetland.**

#### **1 Introduction**

- 1.1 The following notes bring together information which is already in the public domain regarding economic and social impacts of the Viking Wind Farm project and are intended to be read in conjunction with the Head of Planning's report PL-44-10-F 'CONSULTATION ON SECTION 36 APPLICATION ETC ON THE VIKING WIND FARM'.
- 1.2 The Head of Planning's report concerns an application for consent under s36 of The Electricity Act 1989, The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000. The Scottish Ministers will at the same time as making a determination on the s36 application make one in relation to deemed planning permission. The Council, as planning authority, has been consulted on the above proposal and is expected to provide its opinion, taking account of all relevant Council policies and the views of the community.
- 1.3 The planning service report does not set out the economic impacts of this development and further notes that this is a political perspective.
- 1.4 Whilst acknowledging the view of the planning service that Scottish Ministers take account of the 'precautionary principle' as set out in paragraph 132 of the Scottish Planning Policy 2010, to protect the natural environment. This must be considered in the context of sustainable economic growth where planning authorities are encouraged to take a positive approach to development, recognising and responding to economic and financial conditions in considering proposals that could contribute to economic growth. This is consistent with Scottish Planning Policy, Paragraph 33, Sustainable Economic Growth.

#### **2 Economic Benefits**

- 2.1 Chapter A17 of the project's Environmental Statement Addendum summarises its socio-economic effects.
- 2.2 In order to assess the approach taken by the project to evaluate the socio-economic effects, I have referenced the Fraser of Allander Institute, University of Strathclyde, discussion paper '*The importance of revenue sharing for the local economic impacts of a renewable energy project: A Social Accounting Matrix approach*' October 2008, which uses the Viking Wind Farm project as the subject of the discussion, and *The Shetland Regional Accounts, 2003*. I believe the approach taken by the project to evaluate the socio-economic benefits and the magnitude of these benefits to be fair.

2.3 Further, The evidence confirms that the predicted socio-economic effects are potentially transformational at a local level and of important significance at a national level.

2.4 The operational phase plus the construction of the project is expected to bring about a total value to Shetland (at today's prices) in the order of £930 million. (The anticipated direct value to the Shetland economy is expected to total £878.6 million from the operational life, plus £54.5 million over the 5 year construction phase).

2.5 The £878.6 million of value predicted to Shetland from Viking wind farm's operational phase is based on an extrapolation of the following annual income estimates of the project over its expected operational life (up to 23 years):

Benefit	Average per annum over 23 years
Land rental	£ 7.8 m
Community Levy	£ 1.3 m
Profit to Shetland Charitable Trust	£23m
Profit to other shareholders	£ 2.6m
Income to Shetland based suppliers	£ 2.3m
Direct annual wages	£ 1.2m
TOTAL	£38.2m

2.6 The total estimated income to Shetland Charitable Trust over the predicted 23 year life of the project is £529 million.

2.7 The anticipated Full Time Equivalent (FTE) employment figures directly associated with the project are as follows:

Direct jobs from operations	42
Jobs created in other support services	23
Construction jobs	174 (average for 5 years)

2.8 From the direct wealth generated from the project it is estimated that a further 370 jobs are created and sustained through wise reinvestment by the Shetland Charitable Trust and other investors and beneficiaries.

2.9 The total overall predicted number of FTE jobs created and sustained in Shetland is therefore:

$$42 + 23 + 370 = 435 \text{ jobs (plus 174 for 5 years in construction)}$$

2.10 In addition to the foregoing direct benefit predictions to the Shetland economy, as is widely known; Viking Wind Farm will trigger an interconnector between Shetland and the wider UK electricity transmission grid.

- 2.11 One of the strategic aims of the Council is to strengthen and diversify Shetland's economy, and to develop its renewable energy industry.
- 2.12 Given the scale of Shetland's renewable energy resources, and the insatiable demand for electricity generated from renewable sources, it is my view that Shetland should seek to benefit economically, in the fullest possible way.
- 2.13 It is clear to me that Shetland cannot do this without an interconnector to provide an export mechanism for renewable electricity.
- 2.14 It is equally clear to me that such a connection will not be sanctioned by the electricity regulator, Ofgem, without projects of sufficient scale to economically justify investment in such a connection. The Viking Wind Farm project proposal is of sufficient scale, in my view to trigger the connection.
- 2.15 The development of a marine renewable energy sector in Shetland is also a strategic priority.
- 2.16 Pelamis Wave Power and Vattenfall (Swedish state owned electricity company – 5<sup>th</sup> largest electricity generator in Europe) are poised to develop a £60million wave energy project in Shetland. This project will fall if an interconnector is not approved. An interconnector will not be approved if the Viking Wind Farm is not approved.
- 2.17 Marine Scotland and the Crown Estate have announced a seabed leasing round in locations along Shetland's Western seaboard. This is being done in consultation with the Scottish Governments Saltire Prize. These initiatives are designed to provide a catalyst to marine technology research and development.
- 2.18 Marine energy R&D is a significant business in its own right. Orkney has in excess of 100 jobs already associated with marine R&D. Without a grid connection to the mainland there is little prospect beyond scratching the surface, of this strategic potential being realised in Shetland.
- 2.19 I am also aware of significant inward investment interest from a German company called Enertrag. This centres round an onshore wind proposal to potentially be located in South Yell. Enertrag's interest is entirely predicated on the provision of an interconnector between Shetland and the UK electricity grid. The provision of the interconnector is entirely predicated on the Viking Wind Farm project.
- 2.20 The limitation of the Shetland electricity grid is currently 'strangling at birth' opportunities for Shetland businesses, communities and individuals to benefit from generous feed in tariff's for renewable electricity sold onto the grid. An interconnector would be a catalyst for grass roots up developments of this nature to happen in Shetland. The rest of the country

benefits and moves forward whilst Shetland developers are faced with an ongoing technical barrier to entry.

### **3 Policy**

3.1 This note has identified the main economic impacts if the application were to proceed. The application should also be considered in respect to the Councils Corporate Plan and Economic Development Policies. I refer to the Wealthier outcomes of the Council's Corporate Plan 2010-2012, in particular, 'Our renewable energy resources will be used as a stimulus for economic growth, we will:

- Apply continuous pressure to get a positive decision made about an inter-connector between Shetland and Mainland Scotland;
- In the meantime, negotiate better access to the local grid, for the benefit of individuals and communities involved in generating renewable energy;
- Assist in development of marine renewables, including negotiation with the Crown Estate about access and cost; and
- Maximise opportunities for servicing offshore renewables, including the development of infrastructure (ports & vessels) and skills.

Also, Economic Development Policy Statement 2007-2011

Policy 17 Continue the development of the Viking Energy community wind farm project.

Pledges Establishment of a fixed interconnector to the UK mainland by 2012.  
Gain full planning permission for Viking Energy.  
Viking Energy community wind farm project to be at construction stage by 2011.

### **4 Summary**

4.1 It is my view that the Viking Wind Farm project and related interconnector are of paramount economic importance to Shetland, the project will provide substantial intergenerational economic & social benefits which should be considered alongside the Head of Planning's report.