

NON-TECHNICAL SUMMARY

A INTRODUCTION

Scottish and Southern Energy has submitted a planning application for a 205MW, 57 turbine wind farm on the Pairc peninsula in the South Lochs area of the Isle of Lewis (Figure 1). The application was accompanied by an Environmental Statement, which recorded the findings of an Environmental Impact Assessment.

The Environmental Statement is contained within four separate volumes.

Volume 1, this volume, is the Non Technical Summary (NTS) which summarises the Environmental Statement.

Volume 2 is the main volume or Written Statement.

Volume 3 is the Volume of Figures referred to within Volume 2.

Volume 4 is the Volume of Appendices referred to within Volume 2; for convenience Volume 4 is presented in two parts, Part A, the written reports and Part B the accompanying figures.

The Environmental Statement has been compiled by Ash design + assessment in consultation with The Scottish Executive with contributions from the following specialist consultants:

- Landscape and Visual: Ash design + assessment,
- Ecology: Ecology UK Ltd.,
- Ornithology: Central Science Laboratory and Ecology UK Ltd.,
- Soils and water: Mouchel Parkman Ewan
- Noise: Hayes McKenzie Ltd
- Cultural Heritage: CFA Archaeology
- Traffic: Halcrow Group Ltd
- Social and Economic: Ash design + assessment.
- Tourism and Recreation: Ash design and assessment

B BACKGROUND

Man made emissions of greenhouse gases, in particular carbon dioxide, are widely believed to be accelerating the process of climate change. Concern about the environmental, social and economic consequences of climate change has driven agreements to control emissions of greenhouse gases. As part of the European Union plan, the UK has a target to reduce greenhouse gas emissions by 12.5% by 2008-2012, against a 1990 baseline¹.

A key element of the greenhouse gas reduction programme is the further promotion of renewable energy, by means of a market mechanism referred to as the Renewables Obligation. The Renewables Obligation incentivises electricity suppliers such as Scottish and

¹ In addition there is a voluntary target of 20% reduction by 2010.

Southern Energy to develop additional renewable energy supplies, and the Pairc proposal forms a part of this wider programme.

Scottish and Southern Energy's renewables programme includes onshore wind, refurbishing existing hydro, new hydro and co-firing of biomass. In addition, new and emerging technologies including offshore wind, tidal, solar and small scale wind are being evaluated and supported.

The Pairc site was selected, along with other sites, after a detailed site selection process that considered technical and environmental factors. The site is not subject to any nature conservation or other designations.

C THE DEVELOPMENT

The proposed site of the wind farm is situated on the Island of Lewis one of the Western Isles of Scotland, approximately 15km from south of the town of Stornoway. The site is located in the Pairc peninsula that lies between the sea lochs of Loch Eireasort to the north and Loch Sealg to the south. A third loch, Loch Odhairn part bisects the Pairc area. A number of small villages are located along the coastal strip.

The landform of the Pairc area is one of frequent low rocky hills or knolls surrounded by areas of peat with frequent lochs, lochans and dhu lochs.

The windfarm layout is shown in Figure 2 and would comprise the following main elements:

- 57 wind turbines, with a tip height up to 145m, on reinforced concrete foundations, with an internal or external transformer
- site tracks allowing access to each turbine
- a control building / switching-station
- anemometer masts

Turbines would be connected to the control building / switching-station by underground cables which will be connected to an AC/DC converter station and linked by a sub-sea DC cable to the mainland transmission system. The converter station and grid connection components do not constitute part of this application for Section 36 consent

Construction would last approximately 24 months, involving civil, electrical and turbine contractors. A temporary construction compound would be established. Rock will be required for various purposes, in particular for track construction, and borrow pits will be formed on site to avoid the need to import stone.

Environmental factors have influenced the design and layout of the windfarm, in particular landscape and visual, ecological and avian considerations.

Appropriate best practice measures will be incorporated into the detailed design and construction methods.

The windfarm would operate for nominally 25 years, typically generating enough electricity for 115,000 homes annually. At the end of 25 years the site would be decommissioned.

D ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment is a process that considers how a proposed development will change existing environmental conditions, and what the consequences will be. It therefore informs both the project design and planning decision-making processes.

The process, which is reported in the Environmental Statement comprises the following stages:

- Scoping, to define the issues which are to form the basis of the Environmental Impact Assessment
- Consultation, to supplement the Scoping and agree any specific methodologies
- Baseline reviews, to establish relevant existing conditions on the basis of currently available information and / or new surveys
- Characterisation of the value or sensitivity of potentially affected elements of the environment (receptors)
- Prediction and characterisation of the changes experienced by the receptors (impacts)
- Evaluation of the consequences for the receptor of the impact (effect)

The assessment of effects for some environmental aspects is based upon established methodologies, techniques and criteria. These are applied as appropriate.

E PLANNING CONTEXT

General

Scottish Planning Policy (SPP) identifies key priorities for the planning system. National Planning and Policy Guidelines (NPPG's) provide statements of Scottish Executive policy on nationally important land use and planning issues. Planning Advisory Notes (PAN's) provide advice on good practice and other relevant information.

Planning policies and guidance contained in these documents is reflected by local planning policies as set out in the Western Isles Structure Plan and the emerging Western Isles Local Plan

The relevant policies and guidance that pertinent to the proposed wind farm development have been identified and taken into account in its design and in this Environmental Assessment.

F LANDSCAPE AND VISUAL ASSESSMENT

Landscape Character

The Environmental Statement assesses the landscape character within 35km from the periphery of the proposed development and describes the key components, features and characteristics that contribute to the quality and perception of the landscape within the study area. This assessment provides an evaluation of the implications of the proposed development in terms of direct impacts on key landscape components and features. It also considers the extent to which the loss of features and the introduction of the proposed windfarm and its associated infrastructure would influence perception of local landscape character within the study area and its implications for the wider, regional landscape character. The aim of the landscape impact assessment is to identify, predict and evaluate potential key effects arising from the proposed development. The assessment of predicted impacts involves:

- an appreciation of the nature, form and features of the proposed development in the context of the baseline landscape character. Landscape character is a composite of physical, biological and cultural elements. Landform, hydrology, vegetation, land use pattern and cultural and historic features and associations combine to create a common ‘sense of place’ and identity which can be used to categorise the landscape into definable units (character areas). The level of detail and size of unit can be varied to reflect the scale of definition required. It can be applied at national, regional and local levels.
- a review of the sensitivity to change of designated sites and landscape character in relation to changes proposed. This is arrived at by a review of landscape value and scenic quality.
- an evaluation of the predicted magnitude of change experienced by designated sites and landscape character, assuming implementation of the proposed development. This is in the form of quantification and description of the loss of, or indirect impact on, specific landscape components that make up the character of the various local landscape areas within the study area. Further, it includes explanation of the predicted change in the composite quality of the various areas related to such loss and influence in combination with the compatibility of the proposed forms within or neighbouring the various areas.
- assessment of the degree and significance of the impact of the proposals on the designated site or landscape character under consideration by relating the magnitude of change to the sensitivity to change.
- the study area defined for the landscape character assessment extends for 35km from the perimeter of the development site (i.e. from the outer turbines) in accordance with current Best Practice as set out in the guidelines by Scottish Natural Heritage. The 35km study area corresponds to that used for the visual impact assessment.

The bulk of the site lies in an undulating area largely covered by sheep grazed moorland and bog with a large number of small lochs and rocky outcrops. The site varies in altitude

between approximately 20 and 180m, with topography generally sloping upwards from west to east. The site is bisected by the Abhainn Ghleann Ouirn valley which leads to the coast where the river flows into Loch Odhairn. The site is bounded to the north and south by Loch Eireasort and Loch Sealg respectively. To the east is the coastline of Lewis and to the west lies steeply sloping higher ground, hills and mountains. There is some crofting activity along the Abhainn Ghleann Ouirn valley outwith the site boundary to the east and around the surrounding coastal settlements to the north, east and south. The South Lewis, Harris and North Uist National Scenic Area (NSA) is located approximately 3km south of the Pairc site.

Although there will be no significant impact on designated sites, such as the NSA and the historic landscape of Lews Castle in Stornoway, there is likely to be significant impact on a number of local landscape character areas (LLCA's) within 15km of the proposals. Direct and substantial adverse landscape impacts would be experienced in the Character Areas referred to as Rocky Moorland R1a and Boggy Moorland B1 areas in Pairc. In addition, direct and moderate to substantial impacts would be experienced in the Knock and Lochan K2 LLCA in North Pairc, as a small area of the proposals impinges upon this.

Elsewhere in the detailed study area, indirect adverse landscape impacts ranging from slight to moderate and moderate to substantial would be experienced in the Rocky Moorland LLCA's of Kinloch and Loch Seaforth; Knock and Lochan LLCA's of South Pairc and the North Lochs, Crofting LLCA's of Kinloch, Pairc and the North Lochs and parts of the Mountain Massif LLCA's of Pairc and South Lewis intervisible with the proposals.

However there will be no significant impact upon the landscape character of the wider study area.

Wild Land

Scottish Natural Heritage, (SNH) has published a policy document relating to the definition of wild land that sets out criteria to assist in the identification of such areas of land, and identifies areas of Scotland known as 'wild land search areas' where wild land may occur. At the request of SNH, an assessment of indirect impacts upon these wild land search areas has been carried out for the proposed Pairc wind farm within the study area used for the landscape character assessment.

Impacts on the wild land characteristics in the search areas identified vary depending upon proximity to development and wild land quality and sensitivity.

The impact of the proposed development on the wild land character of the Pairc wild land search area is locally moderate-substantial adverse on the higher, north facing slopes and peaks including Beinn Mhor. However, as this is less than 10% of the total area of this WLSA, on the majority of the area, where views are screened or part-screened by topography, impacts will be either slight adverse or negligible. Consequently, the impact upon the overall integrity of the Pairc wild land search area is not considered to be significant.

The impact on the South Lewis/North Harris wild land search area has been determined as being locally moderate-substantial adverse in the Lewis Moorland LSZ in the extreme north east of the wild land search area, but elsewhere generally slight adverse or negligible. Consequently, the impact upon the overall integrity of the South Lewis/ North Harris wild land search area is not considered to be significant.

Visual Impacts

The windfarm proposals will impact upon views of the existing landscape. In order to assist in this assessment, a Zone of Theoretical Visibility (ZTV) was produced to indicate those

areas of land where the proposed windfarm might appear as part of a view. The ZTV provides a means of identifying potential receptors (viewers) in order that impact assessments can be undertaken. The envelope is not representative of visual impact in itself nor does the presence of a receptor within the boundary indicate that the development would necessarily appear in views currently experienced by that receptor.

A preliminary visual envelope generated during preparation of the Environmental Assessment identified areas of potential intervisibility over a distance of 35km from the periphery of the proposed site on the assumption that the turbines would be of 145m overall height. This was used to establish potential receptor groupings within the study area.

Sensitivity of a receptor to the proposed development considers the nature of the receptor, for example the inhabitants of a residential dwelling are generally considered more sensitive to change than occupiers of a factory unit. The importance of the view experienced by the receptor also contributes to an understanding of sensitivity to change; scenic quality and value of the view are therefore considered.

The ZTV of the study area, confirmed by field survey, indicates that the majority of locations where significant visual impacts occur are within 10km of the site periphery. As a majority of local villages on the Pairc Peninsula hug the coast, steep foreground topography serves to provide screening, reducing to a minimum potential visual impacts upon receptors in these communities.

However, the village of Lacasaidh, which is elevated, within 4km of the proposal, and has views directly towards the turbines, is likely to experience the most significant impacts. A substantial number of receptors in Bailie Ailein and parts of other villages along the coast to the north which overlook the proposals, namely Renais, Crosbost and Liurbost may also experience significant impacts where dwellings are orientated to face the proposed development. However, only the upper parts of Ceos (which lies next to Lacasaidh and also faces the proposed development site) will obtain significant impacts on account of the lower elevation combined with the foreground screening effect of the topography of the opposite shore.

At about 10km from the proposal, parts of Acha Mor may also experience significant impacts at dwellings which are orientated to face the proposal. However, the views are panoramic and large scale so, generally, the windfarm is likely to form a relatively small element of the overall composition.

It is notable that most of Stornoway will not be impacted to a significant extent. The core of the town hugs the harbour and this, together with the physical form of the buildings limits views. The landform around Lews Castle and the mature woodland in the castle grounds also limits views from the centre of Stornoway.

As would be expected, more distant receptors within the study area; including the summits of Mealisval and An Cliseam, the Broch at Carlabhagh, the Blackhouse Village and the standing stones at Calanais; are not significantly impacted by the proposals. The residual effects of the windfarm on these receptors during the operational period will not be significant because of the distance, elevation of the viewpoint (rendering the turbines below the skyline) and the relatively small proportion the changed view forms of the overall panorama obtained. The summit of Beinn Mhor is closer to the turbines, however, and correspondingly there are likely to be significant impacts upon this receptor.

In conclusion, although there will be some localised significant adverse impacts on receptors, particularly within 10 Km of the periphery of the site, notably in Lacasaidh and Bailie Ailein, the impact of the proposed development on the visual amenity of the study area when taken as a whole, is not considered to be significant.

Cumulative Landscape and Visual Impacts

During the landscape and Visual Impact Assessment (LVIA) scoping it was agreed that the Cumulative Landscape and Visual Impact Assessment (CLVIA) should take note of various wind farms within 60km of Pairc. Consultation with Comhairle Nan Eilean Siar, the Western Isles Council, has identified 5 existing or proposed wind farms as having the greatest potential for cumulative visibility with the proposed Pairc Wind Farm encompassing those in planning, those consented and those operational, at the time of writing.

Cumulative Zones of Theoretical Visibility (ZTVs) have been generated as a tool to graphically illustrate the visibility of the wind farms. The technique is similar to that described above under Visual Assessment. The ZTV is not representative of visual impact in itself nor does the presence of a receptor within the boundary indicate that the development would necessarily appear in views currently experienced by that receptor.

The assessment identifies the cumulative magnitude of change arising from the intervention of Pairc into the projected “worst case” baseline scenario which assumes that all other proposed and consented windfarms have already been constructed, (in addition to those which are currently operational). Thus it is the additional magnitude of change arising from the proposals which has been evaluated, rather than the combined magnitude of all the windfarms potentially visible.

The breakdown of this composite picture was carried out on a site-by-site basis in order to ascertain the likely location and nature of the cumulative impacts and whether these would be experienced in Simultaneous Combination (windfarms are observable at same time), in Simultaneous Succession (where observer has to turn to see windfarms from the same receptor location), or in the case of routeway receptors whether these would be Frequently Sequential (where features appear regularly with short time lapses in between) or Occasionally Sequential (where features appear irregularly with long time lapses in between). The assessment was aided by the use of wireframe projections.

A number of landscape and visual receptors (as experienced from both viewpoints and routeways) would experience significant effects if the existing developments together with the various proposals identified, were constructed in addition to Pairc.

The main viewpoints from which it is likely that significant cumulative adverse landscape impacts would be experienced (assuming Pairc was constructed in combination with all the other proposals and existing developments reviewed) are: Lacasaidh, Grabhair, An Cliseam, Baille Ailein, Beinn Mhor and Airidh a Bhruaich. These adverse impacts would arise from simultaneous combination of a large number of windfarms seen at a distance, which, when added to the composition, would significantly change the nature of the wider landscape character experienced from that location. In the case of the remainder, notably the B8060 road pull-in between Cromor and Leumrabhagh, landscape character change would occur as a result of close juxtaposition between the Pairc and Muaitheabhal windfarm proposals.

In terms of routeway receptors, significant and adverse sequential visual cumulative effects would be experienced from the A859 and the A866 roads both frequently and occasionally (assuming Pairc was constructed in combination with all the other proposals and existing developments reviewed). This would be on account of the sequential views of Pairc seen with either a number of windfarms at a distance, or in close juxtaposition with proposed neighbouring development, Muaitheabhal, which together would significantly and adversely impact upon the visual amenity experienced from these routes.

G ECOLOGY

The ecology assessment considers a study area of nearly 77.5km² lying on the east coast of the Isle of Lewis between Loch Eireasort to the north, Loch Sealg to the south and extending inland as far as Loch Sgiobacleit. The assessment is based on new surveys of habitats, vegetation communities and protected mammal species together with a study of existing survey information and information relating to sites carrying nature conservation designations.

The main potential effects considered are:

- Direct habitat loss
- Secondary effects causing habitat change or damage such as changes to peatland hydrology, restoration of disturbed areas and siltation of watercourses
- Disturbance of fauna

The study area consists primarily of blanket mire and heathland, often occurring as an intimate patchwork, together with valley mires, modified bogs and grasslands. These habitats are frequently degraded by burning, and grazing and trampling by livestock. Crofting enclosures are scattered across the study area. The whole area is extremely wet with large numbers of interconnecting lochs, lochans and burns amounting to a landscape that is approximately 8% water. There are no significant areas of woodland.

There are no designated nature conservation sites within the study area. However, the blanket bog, valley mires, heathland and associated habitats are considered to form part of a wider area of *National* ecological importance because of the European and national importance of the habitat types; their extent; the rarity of the valley mire habitat in situations dominated by upland vegetation types; the unusual nature of some of the habitats under conditions of extreme oceanicity; and their fragility and susceptibility to damage by land management regimes and development.

Otter are present throughout Pairc with several breeding holts located in the survey. The population using the study area is considered to be of *International* importance. The species is protected by national and European legislation. Salmon and trout are present in study area watercourses and water bodies.

The layout of the windfarm has taken account of habitat type where possible and has sought to avoid the most sensitive areas in order to minimise impacts. Detailed micrositing of infrastructure at the construction phase will further minimise impacts on the higher quality habitats. Impacts of minor negative significance are predicted from habitat loss as the development footprint is small at less than 1% of any study area habitat.

Localised habitat change may occur for a variety of reasons such as changes to peatland hydrology caused by excavations and drainage, cable trenches and track construction. Valley mires are particularly sensitive due to their dependence on surface and subsurface water flows. Mitigation will be implemented, for example the adoption of methods of track construction that will minimise the extent of the zone of habitat change in deep peat and valley mires. The area affected may be greater than that affected by habitat loss (up to 2.2% of study area blanket bog, valley mire and heathland habitats) but this impact is again considered to be of minor negative significance.

There is the potential for secondary impacts to watercourses and water bodies during the construction and operational phases with consequent impacts on fisheries. Best practice techniques of track and turbine base construction, borrow pit operation and compound area

management will be adopted together with early vegetation restoration on areas of exposed peat and soil to ensure that drainage patterns and water quality within the study area are maintained as prior to windfarm construction. Full implementation of these mitigation measures will ensure that impacts do not exceed minor negative significance.

Actual and potential impacts on otter include destruction of, or disturbance to, foraging areas, shelters and resting sites; disruption of large-scale movements; destruction of breeding sites; increased risk of road traffic injury; and indirect effects due to pollution to watercourses and water bodies. Most of these impacts are considered to be not significant due to the small amount of habitat lost, the temporary nature of the disturbance (mostly during the construction phase) and the ability of the species concerned to become habituated to disturbance or new features. Destruction of breeding sites may have a significant negative impact especially if in use at the time, but this will be avoided by further pre-construction surveys and re-location of infrastructure where necessary, together with the setting up of exclusion zones around known breeding sites and alongside all watercourses and water bodies to restrict access by construction personnel and machinery. The potential for road traffic injury would be reduced by strict control of traffic speed on site, keeping the number of watercourse crossing points to a minimum and installing otter-friendly bridges and culverts where crossing points are necessary.

H BIRDS

The bird assessment considers the impact of the construction and operation of the proposed Pairc wind farm on bird populations within Scottish Natural Heritage Zone 3. In consultation with SNH, the RSPB and via assessment of windfarm guidance documents, 10 key species were identified for in-depth study. Populations and movements within the wind farm footprint and associated buffer areas were assessed using standard ornithological techniques. The assessment is based on surveys undertaken between May 2003 and April 2005 and relevant information taken from appropriate literature.

The main potential effects considered are:

- Displacement of birds during the construction phase of the development
- Collision risk with turbines during the operational phase of the development
- Overall impact on species in relation to their conservation status and sensitivity

The proposed site has no specific conservation designation attached to it or any part of it, and lies 2.7km south at its nearest point to the Lewis Peatlands Special Protection Area (SPA) and Ramsar site, 18km east of the Harris Mountains SPA and 12.3km north of the Shiant Islands SPA. It is also adjacent to The Pairc Important Bird Area (IBA), which lies directly southwest of the proposed site. No evidence has been provided to suggest that birds designated for the Lewis Peatlands SPA make significant use of the proposed windfarm area from breeding sites within the SPA.

Key species, including both Diver species (Red-throated and Black-throated), Golden eagle, Merlin, Greylag goose, Golden plover, Dunlin and Greenshank, were known or suspected to breed within or utilise the wind farm footprint area. White-tailed eagle breeds within 8km of the site and Hen harrier occasionally passed through the area. Black-throated Diver, White-tailed and Golden eagle are categorised as very high sensitivity species; Red-throated diver and Hen harrier as high sensitivity species; and the remaining birds as medium sensitivity species based on their national and international conservation status.

The impact of developing the site and operating the site is therefore considered in relation to these classifications. Impacts are determined through an assessment of displacement during

the construction phase and collision risk during the operational phase. In both instances, the impact on any species is considered to be low or negligible (representing impacts of between 1% and 5%, or less than 1%, of the population within the ascribed Natural Heritage Zone (NHZ). The overall effect of the impacts of construction and operation of the Pairc wind farm proposal on each species within the NHZ, with the exception of Golden Eagle, results in all being classified as of low or very low significance.

A precautionary approach has been taken across these calculations in that effects caused by the construction phase have not been brought forward to the operational phase. It has been assumed, therefore, that even if construction process results in the anticipated displacement of Golden Eagles, those birds will still be present and a collision risk will still remain. Due to the very high sensitivity rating of Golden Eagles and the adoption of this precautionary approach, the overall impact of the proposed development on this species is classified as of medium significance.

With the full agreement of crofters and other relevant parties, a suite of mitigation measures will be implemented to ensure that any impacts on birds are minimised further. Cyclic burning of heather dominated areas will be undertaken to increase Red Grouse numbers that will be of benefit to Golden eagles. Stocking densities will be limited to prevent further damage of upland heath and mire habitat from overgrazing which will benefit waders and raptors. In addition to these, the effects of moorland drainage will be reversed with the creation of dams and sluices to benefit waders, passerines and, in turn, Merlins.

I NOISE

An assessment of noise from operation, and from construction activities, has been carried out that compares predicted noise levels at residential premises with recognised national guidance.

Vibration effects have not been included in this assessment since they are considered to be insignificant.

Noise from blasting at the borrow pits has not been specifically assessed but the effects would be controlled via appropriate mitigation.

Effects arising from the process of decommissioning (i.e. the removal of the wind farm) have not been considered since they are of a similar nature to construction issues, but of a smaller scale and shorter duration.

Noise Assessment Guidance

In respect of operational noise PAN 45, *Renewable Energy Technologies*, refers to ETSU-R-97, *The Assessment and Rating of Noise from Wind Farms* that presents a series of recommendations that can be regarded as guidance on good practice.

For construction noise, PAN 56, *Planning and Noise*, identifies British Standard BS 5228, *Noise and Vibration Control on Construction and Open Sites*, for guidance on construction site noise control, and as a method of prediction of noise from construction sites. Department of the Environment Advisory Leaflet (AL) 72, *Noise Control On Building Sites*, provides guidance on acceptable levels of construction noise.

Traffic noise has been assessed in terms of the change in noise level caused by construction traffic during peak construction activity except where there is no significant existing traffic flow where it is compared with the AL72 guidance identified above.

Baseline

At the time of preparing the assessment it had not been possible to arrange access to appropriate baseline noise monitoring locations. These measurements will be carried out once access arrangements have been finalised. Baseline data is not used as the basis for the assessment of noise from construction and de-commissioning activities.

Noise Predictions

Predictions of operational noise have been made using the ISO9613-2 noise prediction methodology assuming worst case conditions of down-wind propagation over hard ground. The predictions have based upon measured sound power level data for a turbine typical of the ones that would be installed at Pairc, including an un-certainty factor likely to be warranted by the manufacturer.

Predictions of construction noise have been carried out according to the methodology specified in BS5228 assuming semi-porous ground.

Where appropriate construction traffic noise has been assessed in terms of any increase in traffic flow in accordance with the requirements of the “Calculation of Road Traffic Noise” issued by the Department of Transport.

Assessment

In the absence of baseline data for the area around the site, the assessment of operational noise impact has been made by identifying the level of 'prevailing background noise' in accordance with ETSU-R-97. On this basis the appropriate noise limits would be met.

Predicted noise from construction activities when assessed at the nearest sensitive location meets the guidance in AL72.

The increase in traffic noise due to construction traffic is not significant except on the minor road leading to the site where it is shown to meet the DoE AL72 guidance on absolute levels.

J CULTURAL HERITAGE

The cultural heritage chapter considers the likely effects on cultural heritage interests of the construction and operation of the proposed wind farm. The study has been informed by information provided by Historic Scotland and by the Comhairle nan Eilean Siar (Western Isles Council) Archaeologist.

Cultural heritage resources include:

- World Heritage Sites
- Scheduled Ancient Monuments (SAM) and other archaeological features;
- Listed Buildings and other buildings of historic or architectural importance;
- Conservation Areas and other significant historic townscapes; and
- Historic Gardens and Designed Landscapes and other significant historic landscapes.

The cultural heritage chapter considers potential and predicted direct and indirect effects on all sites and monuments identified by the study within the proposed development area and indirect effects on the settings of Scheduled Ancient monuments, Listed Buildings of

categories A and B and Conservation Areas in the wider landscape. There are no World Heritage Sites that would be affected by the proposed development and the effects on Historic Gardens and Designed Landscapes are addressed in the Landscape and Visual Impact Assessment (Chapters 8 and 9).

The baseline study included consultation with Historic Scotland and the Comhairle's archaeologist, a desk-based assessment of previously known and recorded sites (including assessment of historic maps and aerial photographs) and a reconnaissance field survey of the whole of the proposed development area. Pairc Historical Society supplied useful additional information.

One hundred and sixty eight sites have been identified within the proposed development survey area boundary that includes shielings, townships, farmsteads, boundary dykes, enclosures and cairns. The visible remains are almost all attributable to medieval or later rural land-use and constitute a regionally important relict cultural landscape. One possible boulder stone circle, of likely prehistoric date, was identified within the survey area.

Nine SAMs, 10 Category B Listed Buildings, one Historic Garden and Designed Landscape and one Conservation Area that are present within 15km of the proposed wind farm are potentially intervisible with proposed turbines. Three of the SAMs and two Category B Listed Buildings are within 5km of the nearest turbine.

Direct effects are predicted in relation to ten features of cultural heritage interest as a consequence of the crossing by access tracks of linear land boundaries and head dykes. As a result of the embedded avoidance mitigation incorporated into the proposed development layout direct impacts on the more significant remains have been avoided. There remains the possibility of direct impacts on any buried sites, presently unidentified, and on the palaeoenvironmental resource contained in major peat deposits.

Mitigation measures have been proposed to offset these predicted adverse direct impacts and to ensure the preservation *in situ* of other remains that lie in proximity to proposed development features.

An indirect effect on the setting of the collective cultural heritage resource of major significance has been predicted arising from the visual impact of the proposed development and the acoustic effects of the turbines.

Indirect impacts of moderate significance are also predicted on two SAMs that lie within 3km of the nearest proposed turbines. One of these, Sideveal stone circle (**5351**) is predicted to receive a cumulative effect of low magnitude and moderate significance.

K SOIL AND WATER

The main potential effects considered in the soil and water assessment are:

- Contamination of surface waters and drinking water supplies;
- Erosion and sedimentation;
- Modification of surface runoff and flows;
- Peat instability

The soil and water assessment considered the proposed site area including areas downstream of the site which could potentially be affected.

The study area has a 'knockan and lochan' landscape typical of south-east Lewis, which is characterised by rugged undulating topography dominated by rocky knolls formed of shallow rockhead or outcrop, and depressions filled with peat and holding lochs and lochans. Due to the impermeable nature of the bedrock there are extensive peat deposits across the majority of the study area, with depths ranging from exposed rock to peat greater than 6m deep in places. The majority of the peat sampled was less than 1.25m, however due to the nature of the landscape the depth of peat changes rapidly over relatively short distances and pockets of deep peat are common.

A peat slide risk assessment has been carried out using both a qualitative risk assessment method and simplified slope stability calculations. Within the vicinity of the windfarm infrastructure 26 areas were identified as having a potential peatslide risk prior to mitigation, of these 10 were considered to have a high risk and 16 a moderate risk. In most cases further site investigation and micro-siting at the detailed design stage have been recommended as the primary mitigation measures. If, following further site investigations it is found that there is still a risk of peatslide at any of the identified locations further mitigation such as heightened design and construction good practice and/or engineered solutions will be put in place. The peatslide risk assessment will form the starting point for a formal geotechnical risk management strategy. Provided the measures discussed are put in place it is unlikely that a peatslide will occur as a direct result of the windfarm construction.

There is an extensive network of burns, lochs and lochans throughout the site. Some of the lochs are substantial water bodies and these are found with a large number of lochans at varying elevations forming perched water bodies. In total the lochs and lochans account for 8.5% of the study area (4.4km²), while there is over 120km of watercourses within the study area.

Due to the underlying geology and the extensive peat deposits the hydrological catchments have a flashy response to storm events, however this response is attenuated to a certain extent by the lochs, which act as storage.

Three public water supply sources were identified within the study area. Of these only Tabost public supply, which abstracts water from Loch Tairbeirt situated between Cearsiaider and Gearraidh Bhaird, has the potential to be affected by the wind farm development

The entire study area is used for low density rough grazing. Many of the watercourses, lochs and lochans within the study area have fishing interests.

The proposed windfarm layout has been designed such that areas of deep peat and peatslide risk areas are avoided wherever possible. All windfarm infrastructure will be located at least 50m from all natural watercourses, with the exception of a small number of dubh lochans. At the detailed design and construction stage micro-siting will be used to maximise the distance from these dubh lochans. An assessment has been made of the 39 new streamcrossings required for the wind farm development and suitable crossing types identified for each. Best practice design and construction of all elements of the windfarm infrastructure are proposed. In particular, drainage systems would include silt traps, sediment ponds and buffer strips as necessary to minimise sedimentation and attenuate peak flows. Stream crossings would be designed such that flows and fish migration are not impeded, and a rigorous pollution prevention plan would be implemented to minimise the risk of contamination of surface waters. Regular water quality monitoring throughout the construction phase would be proposed for the surface waters and Tabost public water supply. Visual inspections of deep peat deposits would also be carried out.

It is concluded that with the proposed mitigation in place the majority of impacts on the soil and water environment will be not significant.

The assessment has identified that should a peatslide occur the impact will be significant. However a peatslide risk assessment has been carried out and it has been concluded that the risk of a peatslide occurring, as a consequence of the windfarm construction, is low.

L ROADS AND TRAFFIC

The roads and traffic assessment for construction traffic considers transport links between the port of arrival at Airinis and the site access junction west of Tabost. The movement of turbine equipment has been considered from the potential port of entry at the Airinis fabrication yard, south of Stornoway/Steornabagh.

The main potential effects considered are:

- Traffic congestion due to an increase in HGV traffic
- Traffic congestion due to an increase in non-HGV traffic
- Abnormal road wear and tear

The road network in the study area features the strategic A859 road, which forms the spine road through Lewis/Harris. From this spine there is a network of local roads linking communities and settlements. Access from the port facility to the spine road is along an unclassified but industrial road. Access from the spine road to the site access junction is along the B8060 which in places is single track with passing places.

National and local transport policies were reviewed to allow a desktop hierarchy of roads to be prepared. Site visits were undertaken to undertake a visual review of conditions, and to identify sensitive receptors. One main route for construction traffic was derived, based upon the suitability to carry the types and numbers of construction vehicles predicted.

The quantities of plant, equipment and materials required for the construction effort were considered and a delivery profile has been established. This identifies the average number of construction vehicle movements (average 9 vehicle round trips per working day rising to 15 vehicle round trips during the busiest months).

These movements were then compared in relation to historic traffic flow data to allow the level of impact of increased traffic volumes to be assessed. This showed that, for the locations at which historic traffic data was available, construction traffic would represent an increase of between 8% and 18% of the HGV flow. For all vehicles (construction and staff) the increased flows represented between 0.25% and 4.1% of the existing traffic flows.

The receptors assessed are mostly predicted to experience Low Significance Impacts, with the sections of the B8060 road to be used in reaching the main site access being Medium Significance. Mitigation measures such as on-site concrete batching as opposed to hauling ready-mix to site, and local traffic management measures are proposed which seek to minimise the impact of traffic during construction

M AIR AND CLIMATE

The potential effects of the development on air and climate are as following:

- Dust particulate production during construction
- Overall reduction of Carbon and Carbon Dioxide emissions by displacement of fossil fuel fired generation, whilst also considering the potential impact for reduction to carbon sequestration and subsequent release of carbon dioxide due to land disturbance.

Whilst there is potential to generate dust particulate matter during the windfarm development process, no dust-sensitive receptors have been identified within the construction site boundary. In addition best practice measures have been identified to significantly minimise dust particulate generation and dispersion.

The development is estimated to generate 540,000 MWh which is estimated to offset over 421,200 tonnes of carbon dioxide annually from coal fired generation or 232,200 tonnes of carbon dioxide from grid mix generation annually.

The impact of carbon dioxide released as a result of peat disturbance is not significant as the windfarm site should pay for any carbon losses as a result of development on site in 18 months, where electricity is displaced from the overall grid mix.

Therefore no significant adverse effects on air and climate are predicted.

N TELECOMMUNICATIONS AND AVIATION

Civil and military aviation agencies, television and radio transmission operators, and mobile telephone network agencies and operators have been consulted.

Consultations have identified that the terrestrial television reception at up to 74 properties may suffer some interference and limited interference with mobile telephone transmissions by our operator may occur.

Surveys will be undertaken and any necessary mitigation measures put in place immediately the wind farm becomes operational.

O RECREATION AND TOURISM

The Pairc peninsula is not a core contributor to the wider recreational and tourism resource of Lewis. Use of the area is generally limited to fishing for brown trout, sea trout and salmon, rough shooting and some walking.

Guided wild life tours are operated taking advantage of the presence of sea birds around the coast and eagles, sea eagles, other birds of prey and waders and otters in the hinterland.

The islands key tourist attractions such as the standing stones at Calanais, the broch at Carlobagh and the blackhouse village at Nan Gearrannan are some distance from the site.

During construction the amenities of the Pairc area will suffer from interference from construction activities and their effect upon the quiet, remote ambience which is a significant element of the recreational and tourism appeal.

Once operational the wind farm would be unlikely to occasion direct interference with access or use of the site but it will detract from the experiential quality.

The formation of the site access and the site tracks will improve access for walkers and cyclists and for those engaged in fishing or shooting.

Overall it is anticipated that the wider tourism and recreation resource of Lewis will not suffer any significant residual impact but that within the local area the presence of the wind farm will have a significant impact on some activities as a result of the impairment of the remote and un-developed ambience.

P SOCIAL AND ECONOMIC

General

The project may interact directly with economic and social factors through provision of employment opportunities and the facilitation of community benefits. Indirectly, the project may disturb existing economic activity and affect visitor numbers in the area. The study area considered for social and economic arrangements encompasses an area that is 30km in radius from the development site boundary. This is consistent with the tourism and recreation study area.

Traditionally, the land-based economy centred on crofting, farming and countryside sporting activity. Sea fisheries, construction and tourism also contribute to the local economy. Tourism is considered to be a developing industry and one which is actively encouraged by the Comhairle nan Eilean Saar. The aim of the Western Isles Structure Plan demonstrates clearly the balance that the Council strives to maintain between the economy, the natural heritage and the well-being of the community.

Local Economic Benefit during Construction

Suitably qualified local firms will be encouraged to bid as main contractor, sub-contractor or supplier for a significant portion of the construction work. Construction materials would normally be sourced locally and local transport and plant hire companies used.

The capital cost of the Pairc windfarm development is estimated to be approximately £200 million and would be invested in the purchase of plant, equipment and the construction of buildings and other structures. This is split as follows:

- 70% for the purchase and erection of turbine structures
- 15% for civil engineering works (roads, foundations etc),
- 15% for onsite electrical works

A significant amount of this work would be open to local tender particularly with regard to civil engineering.

There is currently one turbine assembly plant in Scotland at Machrihanish in Kintyre operated by Vestas with other suppliers import the turbines. However, several sites in Scotland are suited to the manufacture of towers, including Airinis.

It is estimated that the on-site construction workforce would total approximately 143 individuals, split between approximately 81 civil engineering contractors, 22 turbine contractors, 30 electrical contractors, and 6 project management staff. Manning levels would, therefore, vary according to the phase of construction, with the highest levels needed at the point where civil works are nearing completion and the first turbines are being installed. At this point, site manning may reach approximately 93 individuals. On average, the manning level would be approximately 63 individuals.

Non- local construction personnel would be accommodated off the site, typically in local hotels and guest houses which may have a short term positive impact locally but is unlikely to be of wider significance.

There would be temporary disturbance to a relatively small proportion of the grouse shooting interests within the site boundary. The construction activities would be timed to minimise this disturbance and on completion of construction activities there would be no material impact on shooting activities on the estate.

Overall, the levels of expenditure in the local economy during construction and the impacts on employment generation are considered to have a **temporary positive impact**.

Local Economic Benefit during the Operation of the Development.

Windfarms can make an important contribution to rural diversification including the redistribution to local authorities of business rate monies collected by the Scottish Executive. The landowner and crofters within the development area would derive rental income from the turbines and this new income would contribute to the economic viability of each land unit. This in turn could allow investment in other aspects of land management with potential to contribute to local economic benefit. In this way, the windfarm development may offer some positive benefit to the local economy. Significantly, there would be the requirement for 25 to 30 full time equivalent operational and maintenance jobs, most of which would be filled by local recruitment. On this basis, overall, the residual positive impacts on economic activities in the vicinity of the site during the operation of the scheme are considered to be **significant**.

As a part of the wind farm development, Scottish and Southern Energy plc will offer the immediate surrounding communities a package of benefits based on established figures for other relevant developments of this type. It is outwith the remit of this document to present details of such a scheme but initial discussions have taken place with relevant interested parties. Scottish and Southern Energy has a strong track record of working closely and positively with local communities within the areas where its operational wind farms are sited.

Significant Social and Economic Impacts

As a consequence of long term employment opportunities and direct contribution by the way of rentals and community benefit, the windfarm development is likely to have a beneficial impact on the social and economic aspects of the study area both in the short and longer term

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SUMMARY

In summary, the Environmental Statement concludes that the development would result in environmental effects, as may be expected of any form of development. Significant environmental effects are likely with respect to landscape and visual impacts within relative close proximity to the development site and also from a cumulative effect assuming all other proposals within the planning system are consented and built and upon the local cultural heritage interest present within the site as a consequence of the effect upon the ambience of their setting. In addition, based upon a worst case analysis, the wind farm is likely to have a significant adverse impact upon the population of Golden eagle as a result of potential displacement or collision with turbine blades.

Such effects would need to be taken into account in assessing the planning merits of the development, in particular how it relates to Government policy in relation to promotion of renewable energy.

A copy of the application, with a plan showing the land to which it relates, together with a copy of the Environmental Statement discussing the Company's proposals in more detail and presenting an analysis of the environmental implications, is available for inspection, free of charge, during normal office hours at:

Comhairle nan Eilean Siar Sandwick Road Stornoway Isle of Lewis HS1 2BW	Stornoway Library 19 Cromwell Street Stornoway Isle of Lewis HS1 2DA	Ravenspoint Centre Cearsiadair South Lochs Isle of Lewis	Post Office Lacasaiddh Lochs Isle of Lewis
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The Environmental Statement can also be viewed at the Scottish Executive Library at Saughton House, Broomhouse Drive, Edinburgh, EH11 3XD.

Copies of the Environmental Statement may be obtained from SSE Generation Ltd., Project Development, 200 Dunkeld Road, Perth, PH1 3AQ (tel: 01738 456489, e-mail Carolyn.murphy@scottish-southern.co.uk) at a charge of £150-00 hard copy and £25-00 on CD. Copies of a short non-technical summary are available free of charge and are also available to download from the Scottish and Southern Energy plc website (www.scottish-southern.co.uk).