



DURRAN MAINS WIND FARM
CAITHNESS
ENVIRONMENTAL STATEMENT
THE NON TECHNICAL SUMMARY

May 2008

The Non Technical Summary

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1 Introduction

1.1 The Proposal

Scottish and Southern Energy Generation Ltd (SSEG) propose to build a wind farm of approximately 19.5 mega-watts (MW) capacity in Caithness. The site location is shown in Figure 1. The wind farm will consist of 13 wind turbines arranged on the site as shown in Figure 2. In addition to the wind turbines, the wind farm will include the following:

- site tracks to each turbine position, and a craneage area at the base to enable erection and maintenance of the wind turbines;
- a control building to house essential switchgear and metering for the power generated from the wind farm; and
- one tower to measure the wind speed and monitor the performance of the wind farm.

1.2 Rationale for Site Selection

1.2.1 Renewable Energy and Planning Policy

1.2.1.1 Scottish Executive

The Scottish Government has participated fully in the UK climate change programme and has set its own programme and targets for Scotland. With reference to the energy sector, it has set a target in the 2007 Spending Review of 31% in respect of the amount of electricity that is to be provided from renewable sources in Scotland by 2011. In terms of installed capacity it is expected that a significant proportion of this will come from onshore wind.

This government programme and target is translated into planning policy was issued by the Scottish Executive in March 2007 as Scottish Planning Policy (SPP 6) Renewable Energy where it is stated that:

In 2005, the Scottish Ministers re-confirmed the 2020 target, quantifying it as 6 GigaWatts (GW) of installed renewables capacity, and confirmed that this figure should not be regarded as a cap on development.

1.2.1.2 The Highland Council

There are no identified wind development areas in the Highlands Structure Plan and in fact with reference to section 2.12.3 of the Structure Plan it is clearly stated that:

The council does not intend to identify preferred search areas (NPPG 6, paragraph 75), because at this strategic level, potential constraints may exist here which are very difficult to assess other than on a site specific basis.

The Council, however, has now published its Highland Renewable Energy Strategy (HRES) which identifies areas for development and areas where there will be a presumption against development.

The HRES is a useful starting point to commence the evaluation of projects but there are clearly difficulties in reconciling the broad brush nature of the document with actual environmental impacts and real sites. This is one of the inevitable difficulties with all strategic guidance. It can never evaluate actual environmental impacts of a specific project and the risk of applying guidance as prescriptive rules is that it can lead to good projects being rejected simply because they do not conform. This appears to be recognised within the Planning report and the deliberations made with regards the Edinbane Wind Farm project where a number of key points in relation to Edinbanes location outside the defined HRES “preferred areas” are made, specifically that:

the Strategy is not intended to be a site specific planning tool, but a strategic documentand that at this strategic level the Strategy cannot be prescriptive;

and in relation to the identified constraints used in developing the strategy on the specific site;

...should these constraints be overcome through a more rigorous assessment of the site ..., the precautionary approach can be set aside and the site may be considered appropriate for wind farm development.

1.2.1.3 Durran Mains and the HRES

Although Durran Mains lies in an area defined as Presumption against for Major developments (which are defined as onshore wind projects between 5 and 100MW), it lies within an area which is a Preferred Area (75% of the site) and Open to Consideration (25%) for projects of at Local level. Local onshore wind projects are those with a capacity between 10kW and 5MW.

At 19.5MW and with 13 turbines of nominally 55m hub and 90m tip height the final Durran Mains proposal is a relatively small project by modern standards and yet is big enough to make a valuable contribution to the production of green electricity whilst not being of an overly dominant scale in the local area. Whilst it is not a Local project

by the HRES definition, at its reduced scale from the original 50MW proposal (the unconstrained scoping proposal before environmental constraints were applied), the impact is not significantly dissimilar to a Local 5MW project.

The Renewable Energy Resource Assessment (RERA) model from which the HRES strategy was derived uses an estimate of the renewable energy potential available in the Highland area based on all available technologies on a km square basis. The RERA assessed the four squares occupying the Duran Mains wind farm proposal as 0, 0.096, 0.056 and 0 and were therefore categorised as “a presumption against”. When reassessed using actual data acquired during the site specific environmental impact assessment, the four squares indicated less sensitivity to wind farm development and scored 0.21, 0.21, 0.21 and 0.24. As the scores all exceed 0.2, and, using the criteria defined in the RERA, the area occupied by the Durran Mains wind farm proposal should be reclassified as a preferred area for major developments. Further details are provided in Chapter 4.1A and are shown in Part 1 Figure B4.5 of the ES.

1.2.2 Benefits of Wind Energy

There are a number of direct benefits resulting from the exploitation of wind energy, the most important of which is the generation of electricity without the production of greenhouse gas emissions.

The Durran Mains Wind Farm will have an installed capacity of approximately 19.5MW, and expected energy yield of around 50 gigawatt-hours (GWh)¹ per annum.

2 The Project Proposers

The Environmental Statement (ES) has been prepared on behalf of Scottish and Southern Energy Generation Ltd (SSEG) by DP Energy Ireland Ltd (DPE). SSEG is a wholly owned subsidiary of Scottish and Southern Energy plc (SSE).

SSE is a FTSE-100 company, formed in 1998 from the merger of Scottish Hydro-Electric plc and Southern Electric plc. The company is based in Perth, Scotland, and employs around 10,000 people. Core activities include the generation, transmission, distribution and supply of electricity.

¹ One GWh is equal to one million units (kilo-watt-hours or kWh) of electricity.

SSEG owns and operates the power generation assets of the Company, which totals nearly 10,000MW and comprises of renewable (hydro, wind and biomass) and fossil fuel power stations (gas, coal and oil).

SSEG will be the owner and operator of the Durran Mains Wind Farm, which forms part of the Company's ongoing renewable investment programme.

DPE acts as a development agent with respect to site evaluation, wind farm design and planning submission for the Durran Mains Wind Farm. It has substantial experience in project evaluation and development in Scotland, Northern Ireland and the Republic of Ireland. DPE is an independent privately owned company registered in Ireland and based in Buttevant, County Cork.

3 Proposed Development

3.1 The Site

The proposed site called Durran Mains is situated approximately 7km south-east of Thurso within the local authority of Caithness. The site location, shown on Ordnance Survey Landranger Maps 11 or 12 is centred on Easting 319500 and Northing 962000 as shown in Figure 1. The proposed site lying 2km north of Loch Scarmclate extends over an area of higher elevation ground with a nominal height of between 80 and 100m above sea level (asl). In all it covers an area of approximately 3km².

The land use consists mainly of grazing for sheep and cattle with some of the better land used for the growing of crop. It also contains two blocks of commercial forestry.

The B874 runs east to west, around 2km to the south of the site. There are several unclassified roads to the east, north and west of the site.

3.2 The Project

The proposed wind farm will consist of 13 three bladed, horizontal axis, upwind turbines with a rotor diameter of nominally 70.5m and a hub height of around 55m. The maximum ground to tip height will not exceed 91m. These machines will have a nominal generator rating of 1.5MW resulting in an overall site installed capacity of 19.5MW.

Each turbine tower is erected on a concrete foundation of approximately 1.5 - 3m in depth, depending on the ground conditions.

The development also includes the construction of new access tracks and craneage pads for each turbine. It is proposed to construct these from local stone, recovered from the site.

One permanent anemometer tower, nominally 55m in height, will be installed to measure wind speeds in order to monitor the wind farm performance over the operational life.

An electrical control building will contain control and metering equipment to control the exported power from the turbines to the grid connection. The electrical cabling between each of the turbines and the on-site substation will be underground.

Construction is anticipated to take approximately 10 months and will consist of:

- construction compound and opening of quarry;
- construction of access tracks;
- construction of turbine foundations and cable trenches;
- construction of control building;
- erection of turbines;
- commissioning of site; and
- site restoration and handover.

After its operational design life of 25 years the wind farm will either be decommissioned and the site reinstated in accordance with the land use at the time or a further planning application will be submitted to replace the existing turbines with new equipment.

4 Environmental Statement

An Environmental Impact Assessment (EIA) has been undertaken in accordance with The Environmental Impact Assessment (Scotland) Regulations 1999, together with a number of other relevant guidelines including the Scottish Executive's Planning Advice Notes (PAN) 45, 58 and Scottish Planning Policy (SPP 6).

Input from the EIA surveys has been collated and presented in an Environmental Statement (ES). These surveys and the rationale for selecting the site, compared with alternative sites considered, are covered within the ES.

5 Environmental Impact Assessment

The main activities involved in the EIA process are:

- Project initiation – preliminary evaluation of site suitability;
- Scoping – the gathering of background information from consultees and other sources to identify any 'significant' sensitivities and prepare specifications for the baseline studies;
- Baseline studies – baseline environmental data including on-site surveys;
- Identification of 'Significant' Impacts – identifying levels of sensitivity and magnitudes of impact;
- Site Design and Mitigation – design modifications to mitigate impacts; and
- Final Design – basis of planning application including proposals for implementation, further mitigation and monitoring.

The above activities have generally been carried out sequentially but a number of iterations of some of the activities have been required before arriving at the final design.

The following key environmental topics and potential impacts of the development were assessed in detail and are documented within the ES:

- Landscape and Visual Assessment (LVA);
- Ecology (Avian and Non-Avian);
- Cultural Heritage;
- Hydrology, Hydrogeology and Geology;
- Noise;
- Traffic and Transportation;
- Air Traffic;
- Air Quality and Emissions;
- Telecommunications; and
- Shadow Flicker.

The ES also includes separate chapters on the rationale for the project, the socio-economic element and forestry impact of the development.

5.1 Landscape and Visual Assessment (LVA)

5.1.1 ZVI's and Photomontages

The landscape and visual assessment considers both landscape and viewpoint sensitivity to the development within a 30km radius study area. It is supported by a range of illustrative tools, such as zones of

visual influence (ZVI's) maps which show areas where turbines might be visible and photomontages and wirelines which illustrate what the constructed wind farm would look like from various viewpoints. Typically viewpoints would be selected to be representative of views from major settlements, local residences, and tourist routes or other attractions. Twenty photomontages are included in the full ES to illustrate the appearance from these locations.

In addition to using these tools to assess the impacts of the proposal, the ZVIs and photomontages also take into consideration of other wind projects within the areas. The assessment thus covers the cumulative effects the development would have on landscape character and visual amenity when considered with other existing, consented or proposed wind farms.

5.1.2 Impacts on Landscape

The 13 wind turbines would be the main aspect of the proposed development with the potential to affect the landscape character of the area. The site access tracks are not likely to have significant visibility beyond the site boundary, and the impact of the wind measuring mast is likely to be insignificant in comparison to the turbines themselves.

Generally speaking in considering potential visual impacts and changes to existing landscapes it is recognised that more man altered landscapes are less sensitive to change. The Durran Mains turbines all lie within an area designated as Zone 1 in SNH's Locational Guidance for On Shore wind farms. Whilst this locational guidance is based on many factors including habitat, and species presence it also includes consideration of sensitive landscapes and the level of existing man management. Zone 1 is the least sensitive category of the three zones identified within the guidance document and in which SNH "considers that there is the greatest opportunity for development from a natural heritage standpoint". The SNH document states:

In general terms habitats, species and earth science interest within this area are of lowest sensitivity to wind farm development. Zone 1 encompasses many of the more managed and man-modified habitats, such as agricultural and commercially forested landscapes.

Once a potentially suitable location has been identified, designing the wind farm layout itself is also important in respect of visual impacts. The layout and turbine selection should relate to the landform, and siting should consider the balance of the layout from key points. The Durran Mains wind farm layout has been developed and much modified from its original and larger design and in its final form is considered to make a clear statement about the function of the wind farm

development, with wind turbines of a size which can be accommodated in the large scale, open landscape of the site.

Overall the visual impact assessment concluded that direct effects on the landscape fabric of the site during construction and operation would be limited in extent, and would in any event be predominantly reversible on wind farm decommissioning and acceptable in landscape terms.

In relation to the landscape character the assessment recognises that the turbines would become a key characteristic of the site and result in a significant change in the character of the Mixed Agriculture and Settlement landscape character type in the immediate vicinity of the site. However, it recognises overall that whilst the development would have a significant effect on the local character of the Mixed Agriculture and Settlement landscape type, it would not have a significant effect on this landscape character type overall.

5.2 Ecology

5.2.1 Avian

The site is not part of an internationally or nationally proposed or designated site (e.g. Special Protection Area, Site of Special Scientific Interest). The Caithness Lochs Special Protection Area (SPA) are however located in lowland Caithness c2km south of the proposed development at its nearest point.

As part of the survey works a full avian assessment was conducted over a 12 month period which included a range of survey methodologies, including walk over surveys (for breeding birds) and vantage point surveys (for raptors and migrant wildfowl) to establish the baseline position. A total of around 1036 hours was spent on site recording bird movements within the study area.

Potential avian impacts were assessed in terms of both loss of habitat and, depending on the species, potential collision risk. It was largely as a result of the findings of the initial bird surveys and mitigation of the potential collision risks at the eastern edge of the original site that the layout was reduced and restricted to the western edge of the development boundary.

Overall with the revised site design, the proposed wind farm development is predicted to have a very low effect upon all the species assessed with the exception of Whooper Swan and Greylag Goose where the effects are assessed to be low.

In all cases the development would result in only a very slight shift in baseline conditions with the change barely noticeable affecting significantly less than 1% of the populations of the species involved.

5.2.2 Non-Avian

In addition to the avian surveys completed an assessment was also conducted over the wind farm areas. This included a survey of both the habitat types and surveys to identify the presence and usage of non-avian species such as otters, pine martins and bats etc.

5.2.2.1 Habitats

The wind turbines and their associated infrastructure all lie within land which is either used for farming (grazing or crop use) or under commercial forestry. The habitats for non avian species thus largely reflect this level of intrusive activity and are thus described as only locally important. The only habitat of any greater importance within the core area at a wider level, was that of wet modified bog.

The assessment considered that although the wind farm construction would cause negative impacts of habitat loss and habitat change given the limited extent of the areas and the types of habitat affected these were not considered to be significant at either the local or wider geographical areas.

In the wider area the assessment recognised that important off-site wetlands received surface water drainage from the core area and would also need consideration. As part of the proposed mitigation measures the impact assessment proposes a detailed surface water management plan. This plan will be drawn up before construction and implemented appropriately to ensure that surface water flow and quality in burns and ditches feeding these wetlands are maintained. With the appropriate mitigation measures in place there will be no negative impacts on the offsite wetlands.

5.2.2.2 Mammals

During the mammal surveys Pine Marten were confirmed as present and using the study area to a greater or lesser extent either for shelter and/or foraging. In addition although not seen during the site surveys it is also possible based on habitat type and regional presence that Otter, Badger, Wildcat and Common Pipistrelle may use the site.

A range of actual or potential impacts on these species was predicted to result from the wind farm development. This included possible impacts resulting from increased sediment loading affecting water courses during construction (primarily otter and water vole), or disturbance during completion of construction activities. A suite of

mitigation measures was proposed as part of the assessment in order to negate or minimise these potential impacts and by full compliance with mitigation proposals, it was predicted that the wind farm construction and operation would result in no significant residual effects for these species.

5.3 Cultural Heritage

The cultural assessment included a desktop study drawing on information from a range of sources, including the Highland Council and Historic Scotland. This identified known recorded archaeological sites and ranked them in importance.

Two walkover surveys of the site were then undertaken in order to search for surface evidence of any unrecorded sites and this was then followed by an assessment of both the direct and indirect impacts which might arise due to the development. Direct impacts are those that result from the disturbance of archaeological sites by excavation, whilst indirect impacts are those which result from visual or other impacts on the setting of archaeological features or sites of cultural heritage importance.

In relation to Indirect impacts no Scheduled Ancient Monuments or Category A Listed Buildings lie within 1km of the proposed wind farm and no impact on the setting of sites of exceptional importance or Scheduled Ancient Monuments have been identified.

Impacts upon the setting of Stone Lud (SR 52) at Bowertower to the east of the proposal were considered and have been mitigated through the removal of the schemes 19 eastern turbines. This has increased the distance from the stone to the nearest turbine from 0.7km to 2.87km reducing the significance of the impact to minor.

Mitigation of impacts upon the cairns immediately to the west of the wind farm has also been considered. The impacts upon these sites relate to their proximity to the turbines. Hence, no further mitigation is proposed as these impacts have been assessed as being of minor or lesser significance.

Overall all the assessed impacts on cultural heritage are of minor or lesser significance and consequently no mitigation is proposed in relation to impacts upon setting.

In terms of direct impacts the turbines and access roads have been positioned in order to avoid known archaeological features and minimise impact on possible archaeological features within the site boundary. As a further mitigation measure during construction where there is the potential for impact on possible archaeologically sensitive

areas avoidance zones will be marked out prior to construction. Marking out and subsequent excavation will be completed under the guidance of a qualified archaeologist.

5.4 Hydrology, Hydrogeology and Geology

5.4.1 General Hydrological Impacts

In addition to drawing on relevant guidance and consultation with organisations such as the Scottish Environment Protection Agency (SEPA), and Scottish Natural Heritage (SNH), a site visit was undertaken to assess the local hydrological and hydrogeological conditions on the site itself.

The main risks to hydrology result from the disturbance to soils during excavation, and the potential for this to enter on site water courses thereby increasing the sediment loads observed in rivers and streams. Other risks include pollution resulting from fuel or oil spillages from vehicles, concrete from shutter collapse or the improper management of rubbish, or sanitary plumbing. Tracks, cable trenches and disturbed areas may also alter existing pathways and provide alternative preferential pathways for site drainage again altering sedimentation loads observed in local streams.

Hydrological risks such as those listed above are generally short term and can be mitigated by application of suitable construction mitigation measures. These include the appropriate use of silt traps to catch sediment before it runs into watercourses, and the use of suitable offset distances (buffer zones) between construction works and watercourses. Risks of groundwater pollution from leakage or spillage of oils and fuels can be minimised by using appropriate bunded locations for fueling so that spillages from tanks are contained within the surrounding bund rather than being allowed to seep away from the area. Emergency control procedures, in the event of accidental spillage, will be defined for contractors so that potential issues are dealt with quickly and efficiently.

It is normal practice to monitor construction by implementing a regime of surface water quality monitoring. This regime would include baseline sampling prior to construction as well as post construction monitoring to check that no adverse effects have resulted from the development.

5.4.2 Specific Areas

A number of sensitive receptors occur in the vicinity of the site. These include:

- Loch of Durran catchment including the Loch of Durran SSSI;

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- Cleanie Moss;
- The River Thurso SAC;
- Loch Scarmclate SSSI;
- Loch Watten SSSI;
- Gillock Burn; and
- The public water supply at Stemster Hill.

A number of these areas were assessed as having the potential for moderate potential impacts. However, these impacts are generally related to the potential release of sediments from the proposed wind farm during construction and can be readily reduced to insignificant through the correct management of sediment laden surface runoff. This management plan will be developed in the site specific drainage plan.

In addition, there are a number of areas on site which were assessed as having a relatively higher sensitivity than other locations on the site, including:

- Turbines 1, 2, 3 and 7 with regard to the potential for causing erosion to the mires/bog habitats;
- Turbines 1,2,3 and 7 as well as Turbines 8, 10, 11 and 13 with regard to the need to minimise any contamination by alkaline sediments;
- Turbine 9, associated access track, stream crossing, quarry and site compound with regard to the potential for alterations to water quality and increased flows to the watercourses leading to the Burn of Durran, and
- the need to design any crossing of field drains to ensure reduced risk of flooding and disturbance, as required.

Prior to implementing any mitigation measures the surveys identified that there was the potential for impacts of low to moderate significance to occur with regard to water quality and minor significance for water quantity.

After mitigation, residual impacts were found to be insignificant to minor. Many of the mitigation measures identified are based upon a combination of effective site management and good housekeeping procedures during construction operations. Appropriate levels of protection will be included within the design of any temporary works and would be agreed with SEPA and SNH prior to implementation.

During the operational phase, periodic inspection of drains and stream crossings will be implemented to ensure that no blockage occurs causing erosion of access tracks.

5.5 Noise

There are two potential sources of noise from a wind turbine: aerodynamic noise as a result of the blades movement through the air, and mechanical noise from the gearbox and generator in the nacelle. Through careful design and development modern wind turbines have become significantly quieter than earlier machines. Aerodynamic noise is minimised by careful attention to blade design and the mechanical noise from the gearbox and generator by gear teeth design and use of sound insulation and isolation materials.

It is possible to hear a swishing sound at the base of the turbine as the blades rotate and to a lesser extent the mechanical noise of the gearbox. Both of these noises diminish quickly with distance and by careful siting any potential for noise nuisance can be eliminated.

During the construction phase, when vehicle activity is at its highest, noise will be produced by delivery vehicles and construction machinery. This will cause a short term noise impact when ongoing in the immediate proximity of dwellings, although this will be reduced during periods of construction activity in the general area.

An assessment has been performed of the noise impact that is predicted to occur due to the construction and operation of the proposed Durran Mains Wind Farm. The proposed development has been sited and designed to minimise noise levels at the occupied residential properties that are located nearest to the site.

The assessment has taken account of current guidance which is contained in Planning Advice Note (PAN) 56: 'Planning and Noise', Planning Advice Note (PAN) 45: 'Renewable Energy Technologies', ETSU Report ETSU-R-97: 'The Assessment and Rating of Noise from Wind Farms' and relevant British Standards and other documents relating to noise and its effects upon humans.

This noise assessment shows how noise from the proposed wind farm, assuming that all turbines are operating at normal speed at the same time, would not exceed any of the target criteria defined in ETSU-R-97. Target criteria have been developed for both night-time and daytime periods, in order to protect both the sleep of local residents and to protect the outdoor amenity of the area.

Predicted levels at all identified receptors are below these criteria during day and night, ensuring an acceptable level of protection to the

amenity of local residents. Properties that are more remote from the development will experience even lower levels of noise.

In terms of construction noise, the distances from the proposed working area to the nearest residential properties are large enough for the likelihood of disturbance due to construction noise to be small. Guidance given in BS 5228 will be used to ensure that best practicable method of minimising noise on the site will be adopted.

As a result, it is not anticipated that there will be any significant disturbance from noise at occupied residential properties within the vicinity of the proposed wind farm.

5.6 Road Traffic and Transportation

Construction of the wind farm will require major plant and equipment to be delivered to the site. With the exception of the main crane for erection of the turbines, it is likely that most of the abnormal loads will be delivered at a suitably close UK port facility before being transported over the road network.

Preliminary road survey work has been undertaken to identify the most appropriate road routes, and site access points from public roads taking into account both safety considerations and the minimising of disruption to local commuters.

Although still unconfirmed, the route is likely to be from Wick Port west along the A882. Final definition of the local route to site will be confirmed following further consultation with the HC roads engineering department and selection of turbine model for the site.

There will be a short term increase in traffic movements locally created by the transport of turbine equipment and construction material to site. This will be minimised by the recovery of stone for road construction from the site, and by appropriate use of road control around the site access roads.

The construction period is limited and, following commissioning, the road traffic during the operational phase will be minimal.

Mitigation measures to minimise disturbance will be incorporated into the construction programme. Overall, the effects on road traffic and transport are expected to be minor over the construction period and negligible during operation.

5.7 Air Traffic

With respect to aviation interests at the proposed wind farm site at Durran Mains, Defence Estates who represent the interests of the MoD with regard to tactical low flying have no objection to the proposal.

The Civil Aviation Authority have also confirmed that they have no objection to the proposed wind farm. Highlands and Islands Airports Ltd who operate from Wick airport have withdrawn their objection to the proposed development.

5.8 Air Quality and Emissions

A major benefit of a wind farm is the displacement of emissions from fossil fuelled plant thereby contributing to an overall improvement in air quality. At a local level, during construction, increased vehicle movements will result in increased levels of exhaust emissions and, therefore, local levels of pollution, although these are likely to be indiscernible.

The primary issue with respect to construction and air pollutants is the potential generation of dust from the preparation of material for turbine bases and laying of access tracks. This is more of an issue in sites in dry desert climates than in Scottish sites where the peaty soil is less prone to becoming airborne and blown around by the wind. No significant impacts are expected provided the proposed mitigation measures and good working practices are implemented.

5.9 Telecommunications

Wind turbines, like all large structures, have the potential to interfere with television or radio signals. The towers are large steel obstacles and can provide a physical blockage to microwave links. The moving rotor can also cause a flicker effect particularly on television signals in some circumstances.

Experience suggests that the potential for significant interference is limited to the area behind a wind farm where the TV signal from a single transmitter must pass through the wind farm. No significant problems are anticipated but the potential for impact has been noted and will be addressed if a problem develops at existing residences.

Where reception problems are encountered, they can be simply remedied by improving the receiving aerials, providing alternative suitable signals or by installing a small scale relay transmitter to bypass the wind farm.

5.10 Shadow Flicker

Wind turbines like all tall structures will cast a shadow in their immediate vicinity when the sun is strong enough. However, they differ from most other structures in their potential ability to create a flickering effect on a stationary observer due to the rotation of the rotor blades.

By careful siting of turbines in relation to dwellings it is possible to eliminate this effect and calculations have shown that no significant impacts are expected on any of the nearby residential properties.

6 Socio-Economic

Wind farms, regardless of location, have the potential for significant positive economic impact on the local economy both directly and indirectly. However, it is concerns with respect to the perceived adverse effect on tourism and quality of life (local amenity) that are cited as major issues during public consultation exercises.

Direct and indirect economic benefits include employment during construction (and to a lesser extent, during operation), purchase of local supplies, use of local facilities, a Community Benefit Programme and income to local farmers and landowners.

The general public perception is often that wind farms because of their visual nature, will deter visitors, and this is often a major topic of debate during community open days and voiced during public meetings.

Numerous opinion poll studies have shown that is not the case. The most recent study commissioned by the Scottish Government "The Economic Impacts of Wind Farms on Tourism (March 2008) and a MORI Poll commissioned by the Scottish Renewables Forum and the British Wind Energy Association "Tourist Attitudes Towards Wind Farms (September 2002) have both concluded that the presence of wind farms in the landscape has very little impact on the tourist industry.

Although Caithness boasts a number of tourist interests many of these are either centred around the coast or around specific activities such as golfing or fishing. Tourism in the area around the wind farm is not highly developed and there are few attractions in the immediate vicinity of the wind farm.

It is unlikely that the wind farm will have any significant impacts (either positive or negative) on tourism in the Caithness area, and given the

limited nature of the tourism activities locally around the site even less likely to have for impacts locally.

7 Consultation

Public consultation and discussion of public concerns is an important part of the environmental impact assessment process in the same way that review and adjustment of the layout to mitigate impacts as far as possible is part of the site design process. Since the inception of the project DPE have consulted locally with individual residents, community councillors from Bower, Castletown, Watten and Halkirk. Activities associated with the consultation process have included:

- Outline proposals for the site circulated to the four chairs of Community Councils, the local councillor, MSP and MP;
- An initial Community Council/Public meeting with layouts and photomontage views with the Bower Community Council and local residents;
- Clarification response to the chair of Bower Community Council based on the questions raised during the Public meeting;
- Meeting with the Castletown Community Council;
- Provision of photomontages from a number of selected viewpoints;
- Meeting with the chair of Halkirk Community Council;
- On going feedback with respect to layout revisions with all four chairs of community council; and
- Meetings with local residents in the immediate vicinity of the site, and provision of photomontage views from a number of individual residences.

As well as the basic advertising requirement involved with a planning application under the Town and Country Planning Act a number of other steps have been taken to ensure local people have the opportunity to respond to the application and make their views known.

This included:

- Distribution of a project status document containing details of the important elements of the design process and some results of the EIA findings. This was distributed to the Chairs of Community Councils for Castletown, Halkirk and Bower. Additional documents were located at Castletown, Halkirk, Watten and Thurso Post Offices. The project status was also defined on a web site www.dpenergy.com. Newspaper adverts

were taken out in the John O`Groats Journal and Caithness Journal advising of the availability and location of the information;

- Full copies of the Environmental Statement (ES) and multiple copies of the Non Technical Summary (NTS) have been provided to each of the four Community Councils;
- Details of the site and main elements of the ES, in particular the key photomontages have been posted on the DP Energy website with the full NTS for download.

Active consultation prior to formal planning submission has taken place with the relevant bodies. These included The Highland Council (planners, environmental health and roads) and members of both recognised governmental and non-governmental bodies associated with developments of this sort.

Concerns raised by local people within the consultation exercise as well as issues raised by the consultees during the formal scoping process have been given due consideration during preparation of the ES.

8 Conclusions

Durrans Mains Wind Farm is the product of a UK wide search which identified 50 potential large scale sites for wind farm projects. The process of site selection and some of the alternatives to the proposal are structured to specifically answer the questions: Why wind energy in general? Why Caithness? Why Durrans Mains? and why does the project look as it does?

The site is located in Zone 1 (Lowest Sensitivity) of SNH's Strategic Locational Guidance for Onshore Wind Farms in Respect of the Natural Heritage.

The wind farm will have an installed capacity of some 19.5MW, and will generate approximately 50GWh/annum of renewable electricity.

The project will have a positive impact on the local economy through direct employment during construction, the formation of a Community Benefit Fund and, as a result of indirect benefits, through the purchase of goods and local services.

The specialist environmental reports indicate that the proposed Durrans Mains Wind Farm site has limited environmental sensitivity, and few rare species which are likely to be adversely affected by the development. Mitigation measures will be implemented in accordance with the appropriate guidance notes. Overall, the proposed wind farm

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has been identified as having no significant adverse environmental impacts.