



Barlockhart Moor Wind Farm
Non - Technical Summary
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Introduction

Barlockhart Moor Wind Energy Limited is a wholly owned subsidiary of West Coast Energy Limited, and in association with the local farmer Gibson Siwo of Barlockhart Farm, has submitted a planning application to Dumfries and Galloway Council for the development of a 4 turbine wind farm to generate electricity on land at Barlockhart Moor, near Glenluce.

Established in 1996, West Coast Energy has developed a reputation as one of the most successful independent wind energy developers in the UK, with a proven track record in the development of wind energy projects, securing planning permission for a range of onshore and offshore wind farms. The Company has offices in North Wales and Scotland.

The proposed wind farm at Barlockhart Moor has been the subject of a formal Environmental Impact Assessment (EIA), which has been fully documented with an Environmental Statement (ES) to accompany the planning application.

The scope of the ES was agreed in discussion with Dumfries and Galloway Council and other statutory and non-statutory agencies. The ES provides environmental information to assist the Local Planning Authority in the process of the determination of the wind farm proposal.

This Non-Technical Summary is the summary of the ES, providing an overview of the proposed development, the key findings of the various technical studies, the potential environmental effects of the development, and proposed mitigation measures.

The ES comprises of:

- Volume 1 - Written Text
- Volume 2 - Appendices
- Volume 3 - Figures and Drawings
- Non - Technical Summary

The Need for Renewable Energy

There are two main reasons why we need renewable energy:

- Tackling climate change; and
- Security of energy supply



Tackling Climate Change

There is now clear evidence that global warming and climate change are a reality and have the potential to cause major adverse effects on sea levels, water supply and agriculture in the coming decades.

Within the UK, climate change is predicted to have the following impacts:

- Extremes in weather, with dry areas becoming drier and wet areas wetter;
- Increased bouts of flooding for communities;
- Increased erosion to coastal land and defences, leading to a greater flooding threat to coastal townships and loss of rare habitats;
- Significant alteration of the species composition of about half of the statutory protected areas in the UK within 50 years, due to habitat changes; and
- A decline in populations of wading birds and wildfowl which depend upon estuaries in Northwest Europe, due to rising sea levels.



One of the major causes of global warming is the emission of carbon dioxide from power stations burning fossil fuels (coal, oil, gas) to generate electricity. In order to combat the threat of global warming, there is a need to obtain clean, diverse and sustainable supplies of energy from renewable sources such as wind.



The Stern Review on the Economics of Climate Change, carried out for the UK Government by the economist Sir Nicholas Stern, was published on 30 October 2006. It is the first serious study of the economics of climate change and highlights the impacts and risks arising from uncontrolled climate change and on the costs and opportunities associated with action to tackle it. Stern reports that:

“An overwhelming body of scientific evidence now clearly indicates that climate change is a serious and urgent issue. The Earth’s climate is rapidly changing, mainly as a result of increases in greenhouse gases caused by human activities”

Sir Nicholas Stern presented his report to Government with the following conclusion:

“The conclusion of the Review is essentially optimistic. There is still time to avoid the worst aspects of climate change if we act now and act internationally. Government business and individuals all need to work together to respond to the challenge. Strong, deliberate policy choices by Governments are essential to motivate change. But the task is urgent. Delaying actions, even by a decade or two, will take us into dangerous territory. We must not let this window of opportunity close.”

Security of Energy Supply

Energy markets both within the UK and worldwide are in transition. In the past 20 years the coal and oil share of electricity generating capacity in the UK has halved, and gas usage has significantly increased.

In the longer term, as North Sea fossil fuel resources are depleted the decline in UK fossil fuels will leave the country more dependant on imported fuel resources from international markets. The 2006 Energy Review Report estimates that the country could become a net importer of energy by 2010 and be importing as much as 90% of its gas needs by 2020 compared to 10% in 2006. The largest global reserves of oil and gas are concentrated in Russia, Central Asia, the Middle East, and African countries.

Such dependency could undermine the security of supply, with risks possibly arising from elevated costs and terrorist activity and consequently the need to ensure indigenous, secure and diverse energy supplies becomes increasingly important.



“A diversity of energy sources – ensuring that we are not dependent on any one supplier, country or technology – is fundamental to managing the risks to the UK’s security of supply. Energy from diverse renewable sources across the electricity, transport and heat sectors will play an important role in this regard. Meeting our targets could reduce gas imports by between 12-16% in 2020, with increasing benefits as these become more scarce and expensive” (UK Renewable Energy Strategy – Consultation, June 2008)

Electricity demand in the UK is increasing at 1% per annum. However by increasing the amount of energy we get from the renewable sources around us, dependence on imported fossil fuels will be reduced. In this way the extra diversity that renewables bring to the UK’s energy infrastructure can make a significant contribution to the Government’s goal of ensuring secure and reliable energy supplies.

Wind Energy Policy in the UK

The UK Government is strongly committed to developing wind power and other renewable technologies. A market-based support mechanism for renewable energy has introduced an obligation on electricity suppliers to buy an increasing proportion of electricity from renewable energy sources. In Scotland this mechanism is called the Renewables Obligation (Scotland).

Renewable energy has a key role to play in the UK Government's Climate Change Programme. Renewable energy sources generally produce low or negligible levels of pollutants such as carbon dioxide and other 'greenhouse gases', and so by displacing conventional sources of energy, they can help the UK meet its climate change targets.

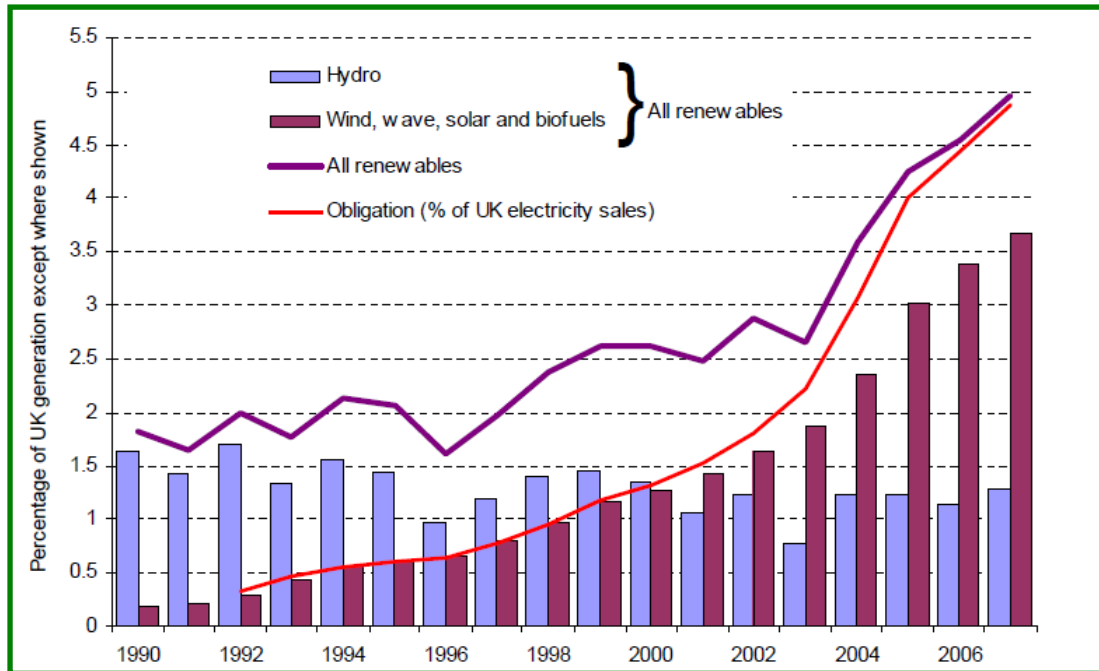


Figure 1 : Growth in electricity generation from renewable sources since 1990 (source BERR Energy Trends, June 2008)

In September 2007, the total amount of electricity in the UK generated by renewable sources amounted to approximately 5%. The UK Government has set targets to increase electricity generation from *renewable* sources to 10% by 2010 and 20% by 2020.

Wind power is an established form of renewable energy technology and is expected to continue to play a key role in the achievement of these targets for many years to come.

Wind Energy Policy in Scotland

Scottish Ministers are fully committed to continuing to promote the increased use of renewable energy sources. This is reflected in a new interim targets recently set by the Scottish Executive, requiring Scotland to generate 31% of its electricity from renewable energy sources by 2011, and with a longer term objective of generating 50% by 2020.

Put bluntly, *Scotland is windy* – with 25% of Europe's Wind Resource, and is therefore excellently placed to exploit wind powered renewable energy production.

Barlockhart Moor Wind Farm

Site Location

The site is located on the land to the south of the A75 and east of the A747, and to the southeast of nearby Glenuce village.

The total planning application area covers approximately 75.5 hectares (ha) although it should be noted that the “development footprint” only occupies 1.9 ha (2.5% of total site area).

The proposed development area is currently used for the purposes of agriculture and unimproved moor.

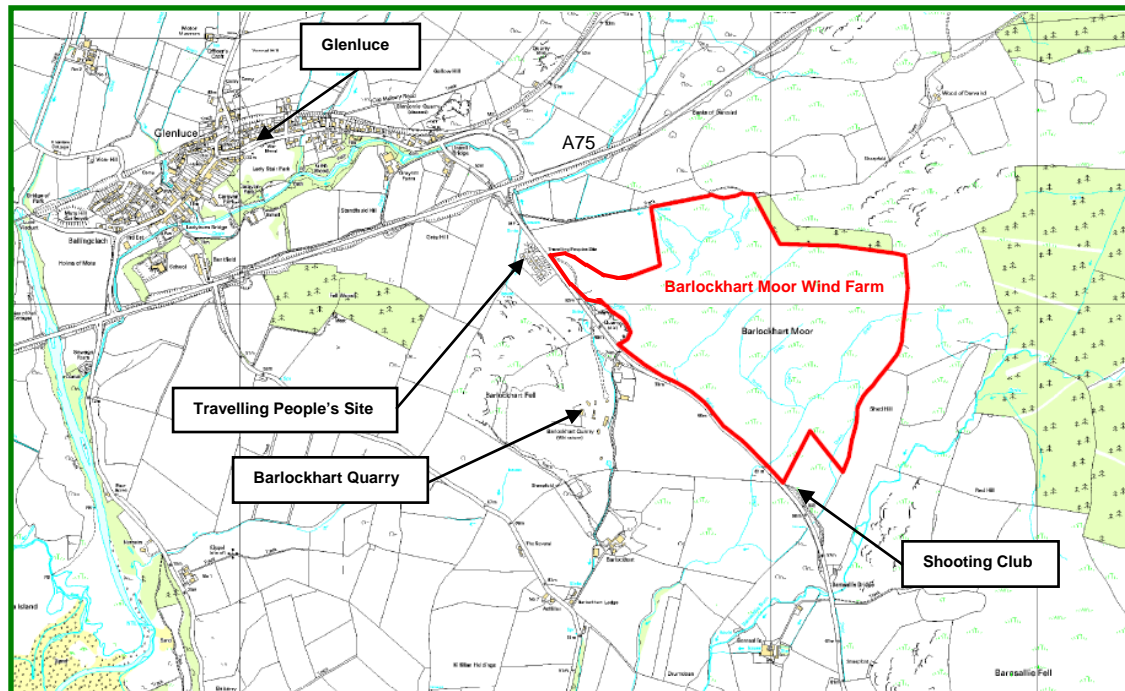


Figure 2 – Barlockhart Moor Wind Farm – site location.

Site History

The Barlockhart Moor Wind Farm was initially identified in 2003 as part of a regional search, and was deemed as being potentially suitable for a wind farm after consideration of the following criteria:

- Commercially viable wind resource;
- Availability of an economically priced connection to the electricity grid;
- No national ecological or landscape designations;
- Entirely located within Scottish Natural Heritage (SNH) zone 1 “lowest sensitivity”¹ – an area deemed as offering “the greatest opportunity” for wind farm proposals;
- No detrimental effect on transmission or microwave signals crossing the site;
- No adverse impact on aviation safeguarding;
- Suitable access from the local highway; and
- Landowner participation

Further detailed assessment and consultations with the Council, consultees and interested parties have tended to confirm these initial conclusions.

¹ SNH (2005). Strategic Locational Guidance for Onshore Windfarms in Respect of Natural Heritage Interest. May 2005. Scottish Natural Heritage

Project Description

The design of the wind farm was a dynamic process which involved several design iterations, underpinned by a continuous process of site evaluation, environmental appraisal, and repeated consultations with relevant organisations. This has resulted in a final layout for the Barlockhart Moor Wind Farm that inherently avoids potential environmental effects.

It is proposed to install up to 4 wind turbine generators, of modern horizontal axis, three bladed design and each rated up to 2.5MW capacity. The maximum height from the turbine base to the top of the blade tip will be up to 112m (367ft). As the physical characteristics of individual turbine models can vary depending on the manufacturer, the turbines will have a maximum hub height of up to 70m (230ft) and a maximum rotor diameter of up to 84m (276ft). For the avoidance of doubt, all turbines erected on the site will have the same hub and rotor dimensions and a maximum base to blade tip height of up to 112m. For the purposes of this application a generic 2.5MW turbine with a hub height of 70m and 84m rotor diameter has been considered.

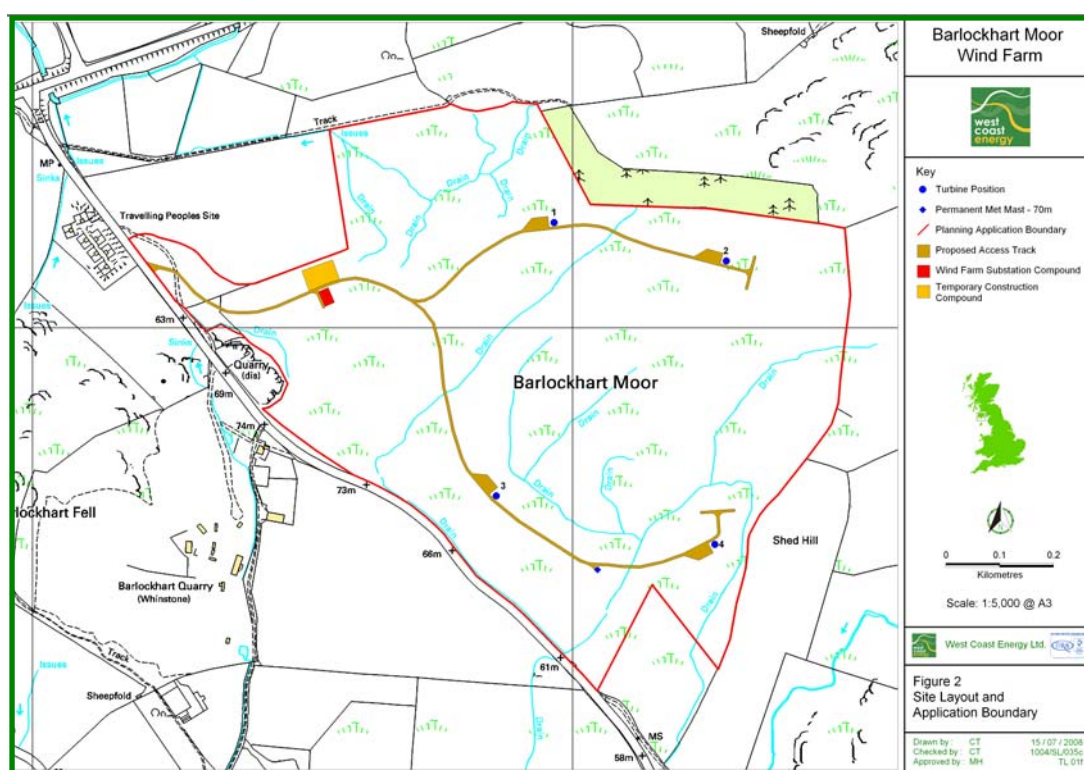


Figure 3 – Barlockhart Moor Wind Farm – design layout.

The wind farm design is shown in figure 3. The wind turbines are spaced so as to minimise energy loss due to wind turbulence, to avoid sensitive areas and to minimise impact on the landscape.

Vehicular access to the wind farm is to be taken from a new junction with the A747. Access to individual turbines would be by proposed purpose built site tracks. The turbines will be connected by underground cables, which will take power from each turbine to a substation at the site.

The on-site substation would then be connected via the existing 33kV Glenluce substation to the Scottish Power distribution network. This connection will be subject to a separate application under Section 37 of the Electricity Act 1989.

Wind Farm Construction and Operation

The wind farm will take approximately six months to construct. The new access route on the A747 will be designed to allow all construction traffic, in particular exceptional loads to turn safely onto the site access track. The design of the junction, route to the site and onsite access tracks meets the requirements of the Council's highways department with regard to visibility, construction materials, surface water drainage, gradient and safety of other road users.

During the construction period, there will be three types of traffic accessing the site – exceptional loads, conventional HGVs, and the vans and cars of construction staff.

There will be around 30 exceptional loads, 28 of which will deliver the tower sections, blades and components of the turbines and the associated electrical equipment. The remaining two will deliver the mobile cranes and other construction plant. With the exception of the cranes, some of the long vehicles delivering the large loads will reduce in length for their return journey, thus reducing their impact.



Aggregate material for track construction, crane hardstandings, substation hardstanding and the temporary site office area will be imported to the site from local quarries during the six months of the construction period. These elements will require approximately 800 HGV loads of aggregate material. Concrete for the foundations will be delivered from local ready mixed batching plants, each turbine foundation will require approximately 66 lorry loads (264 in total). There will be approximately 180 deliveries of plant, machinery etc in addition. If importation of this material is evenly spread throughout this period, it will equate to approximately 7 HGV loads per day.

There will be approximately 20-30 people working on site at any one time during the period of construction and there will be various light vehicle deliveries. These vehicles will approach the site from various directions and will not create any noticeable impact during the construction period.

Very little traffic will be generated once the site is operational. There will be occasional visits by vans for routine maintenance / monitoring, and very infrequently, there may be a requirement for turbine components to be replaced, in which instance large transporters and cranes would need to enter and leave the site.

Environmental Benefits

Based on 4 x 2.5MW turbines (10MW installed capacity) and using a standard capacity factor of 30%, which takes into account the variable nature of wind frequency and speeds, the wind farm is projected to produce enough electricity to supply the annual domestic needs of more than 5,500 homes or 13,400 people (assuming an average UK household electricity consumption of 4,700 kWh per annum,²). This is equivalent to making the populations of Glenluce and Stranraer self sufficient in clean and sustainable renewable energy.³

Every unit of electricity produced by wind energy could displace a unit of electricity which might otherwise have been produced by a power station burning fossil fuel.⁴ Over a 25 year operational period, carbon dioxide emission savings alone could amount to between 243,000 and 575,000 tonnes. (the range in the stated emissions savings reflects the fact that the power generating mix and fuel costs in the UK may change over the life of the wind.). Significant emission savings of NOx and SO2 will also result over the lifetime of the wind farm.

Wind energy provides security of energy supply by providing a greater diversity in the energy mix which is indigenous, independent of outside fuel sources and undepletable.

Once constructed, wind generation produces no carbon, nitrogen or sulphur emissions.

Barlockhart Moor Wind Farm will thus make an important contribution towards the achievement of Scotland's renewable energy targets – these being the generation of 50% of electricity from renewable energy sources by 2020.

Other Benefits

The cost of the wind farm is expected to be approximately £12 million. The provision of site facilities, concrete foundations and access roads together with general civil engineering and technical services would benefit local companies, contractors and their employees. Previous experience suggests that 20-30% of the project's value is available for local construction companies to tender, with additional indirect expenditure in local shops, hotels, service stations etc.

To provide additional benefit arising from the wind farm development, Barlockhart Moor Wind Energy Limited is presently investigating the opportunities to establish a community wind farm trust fund, which can be used to assist or promote social, environmental and educational projects in the local area over the 20-25 year life of the wind farm. Discussions will take place with the Council, the local community and with Solway Heritage on the mechanism for the legal delivery of the trust.

Environmental Impact

Early consultations with Dumfries and Galloway Council and other stakeholders, including the local community through a public exhibition and Community Council presentation held in June 2008, have identified the key environmental and amenity issues to be considered in determining the planning application. These are fully addressed in the Environmental Statement, which includes reports on ecology and birds, landscape and visual amenity, noise, hydrology, cultural heritage, safety, and the effects of the proposal on television and other communication systems. Where appropriate these reports have been commissioned from independent expert consultants. The main conclusions are summarised below:

² BWEA (2002). Calculation for Wind Energy Statistics. <http://www.bwea.com/edu/calcs>

³ Population statistics from National Statistics, <http://neighbourhood.statistics.gov.uk/dissemination/>

⁴ Parliamentary Office of Science and Technology (1994). Select Committee Briefing: *Environmental Aspects of Wind Generation*. Crown press.

Landscape and Visual Impact

An independent landscape and visual impact assessment (LVIA) of the proposed wind farm was undertaken, involving a review of landscape character and designations, and evaluation of a range of viewpoints around the proposal site. Computer generated images of the wind farm were superimposed on photographs to create photomontages which give an accurate impression of the scale and location of the turbines

The LVIA consultant has concluded that Barlockhart Moor Wind Farm would be located within a medium-large scale landscape with a simple landform, which is able to accommodate the scale of development proposed. The ridge to the north of the site, the hill at Barlockhart Fell immediately to the west and the undulating, forested landform to the east and south-east both act to limit the effects of the development on both landscape character and visual amenity at middle and longer-distances.

At closer proximity, the proposal would be a prominent, and in some cases dominant new landscape feature and would have a significant effect on views from of the residential properties to the north, west and south-west. However, direct views from the greater part of the village of Glenluce would be well screened by the intervening Barlockhart Fell.

The proposed turbines would be evident in longer-distance views from the western shores of Luce Bay and from elevated parts of the Rhins peninsula, where the turbines would be visible as new features on the eastern side of the bay, part screened by Barlockhart Fell. At greater distances, such as the northern and southern thirds of the Rhins peninsula and the mountainsides and summits to the north-east of the site, whilst in theory visible, the proposal would be difficult to discern in all but the most exceptional viewing conditions.

Potential cumulative effects arising between the proposed Barlockhart Moor Wind Farm and the nearby proposed wind farm development at Carscreugh would be significant in EIA terms, due to the proximity of the two sites. These effects would be experienced in the areas immediately to the north and to the south of the Barlockhart Moor site. Cumulative effects arising from development at Barlockhart Moor together with other wind energy developments such as Artfield Fell or the recently consented North Rhins, Arecleoch or Mark Hill Wind Farms would not be significant.

As with any scheme of this nature, there will be a change to the landscape and a degree of local visual impact, but if Government targets on renewable energy and onshore wind are to be met, it must be accepted that wind turbines do have a place within the landscape and countryside. Any significant effects will be very localised.

The turbines will be of modern 3 blade design and will be painted an appropriate matt colour, to be specified by Dumfries and Galloway Council. A matt colour reduces the distance over which the turbines are visible, especially in dull weather conditions or low light conditions.

Four predicted views (photomontages) of the wind farm from Challochmun, Ardfillan, Whitecairn and Carscreugh are shown in this document. A total of 30 viewpoints are illustrated in Volume 3 of the ES.

Viewpoint 1 : Challochmun



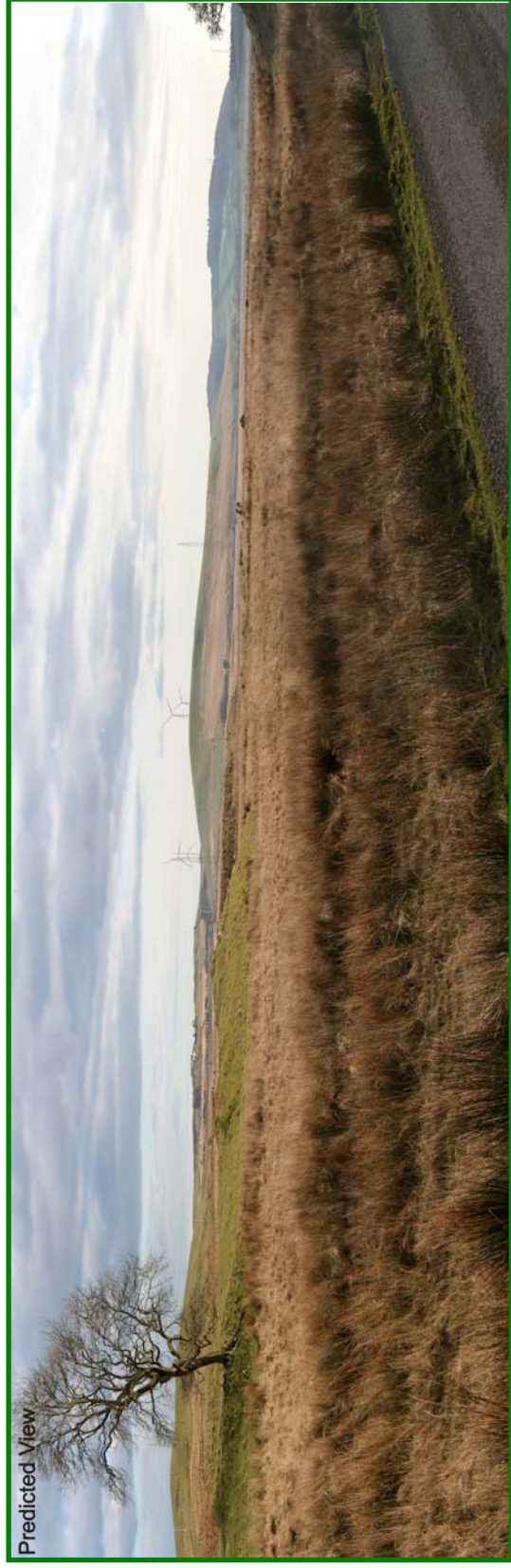
Viewpoint 2 : Ardfillan



Viewpoint 23 : Whitecairn Caravan Site



Viewpoint 24: Carscreugh



These Photomontages are not shown to scale

Ecology

An independent study into the ecological impacts of the proposed wind farm has been undertaken.

The application area holds no statutory designations with the closest statutory site (The Flow of Dergoals Special Area of Conservation) located 1.6 km to the east of Barlockhart Moor. The development will have no impact on the integrity of The Flow of Dergoals or any other protected site.

Surveys revealed only limited evidence of otter, bats, water vole, red squirrel and badger within the Barlockhart Moor Wind Farm boundary.

A phase 1 habitat survey recorded the following different types of habitat within the study area boundary: wet modified bog/dry dwarf shrub heath mosaic; coniferous plantation; semi-natural broad-leaved woodland; improved grassland; semi improved grassland; standing water habitat and river habitat.

This has enabled the wind farm design (principally the turbine bases and new access tracks) to specifically avoid or minimise the loss of potentially sensitive habitats.

Following implementation of the proposed mitigation measures, it has been assessed that no significant impacts are predicted for fauna and habitats identified within the development area during construction, operation, and decommissioning.

Birds

Consultation and field studies have been undertaken in recent years to identify the main ornithological receptors within the development area. Vantage point watches surveying the proposed wind farm and surrounding area were started in June 2005 and were carried out until April 2007. A breeding bird survey was completed in 2006 and black grouse lek surveys were carried out in 2008.

Four species listed on Annex 1 of the EC Birds Directive (79/409/EEC) were recorded within or over the study area. One was assessed as being of Very High value (hen harrier) the remaining three assessed as High value (whooper swan, peregrine and merlin). Small numbers of pink-footed geese (one flight of 21 individuals), greylag geese (one flight of 32 individuals and one single bird) and one single brent goose were recorded flying over the ornithological study area. Several other species which are either listed in the Scottish Biodiversity List, the UK Biodiversity Action Plan (UK BAP) or which were otherwise considered noteworthy were recorded.

No adverse impacts on raptors are predicted to occur within the development area. Collision risk assessment showed that there would be no significant collision risk to any of the observed raptor species. Collision risk assessment for whooper swan showed no significant impacts, and no adverse impacts are predicted for any other waterfowl species.

No significant impacts on any other bird species are predicted during construction, operation or decommissioning of the wind development.

From the studies conducted, it is concluded the development area is located in an area of low bird sensitivity, and the selected location of this site has ensured that there will be no significant impacts on populations of important or sensitive bird species.

Cultural Heritage

Independent archaeologists were engaged to undertake an assessment of the Barlockhart Moor Wind Farm site and surrounding area. Cartographic and bibliographic sources indicate that the site itself has been in agricultural use for at least the past 400 years. The landscape surrounding the proposed development area has been one of considerable cultural activity and there is an abundance of prehistoric remains, as well as a few sites dating to the medieval period. Post-medieval remains primarily consist of residential and commercial buildings within the village of Glenluce, and farmsteadings in the wider landscape.

Only a relatively small part of the site within the application boundary will be directly affected by the turbines, access tracks and associated development. A walkover survey of the Barlockhart Moor site undertaken in 2008 did not reveal any new sites of cultural heritage interest. Nevertheless, in compliance with national and local planning policies, it is advised that a watching brief may be required during ground breaking works associated with the development of the site. The aim of the watching brief would be to identify and record any hitherto unknown remains of archaeological significance encountered prior to their destruction.

Potential visual impacts on the setting of Scheduled Ancient Monuments and Listed Buildings and Monuments of National Importance by the proposed wind farm have been assessed by the archaeologist. In the vast majority of instances, the visual impacts are deemed to be of *Minor* or *Negligible* significance, although it is noted that there will be an impact of *Minor/Moderate* significance on the hill fort at Knock Fell and the archaeological remains at Airyhemming, with the intervisibility of these sites, both located on prominent hills in the landscape, likely to be interrupted by the proposed wind farm.

Geology & Hydrology

Independent consultants were engaged to undertake an assessment of the potential impacts on the geology, soils and hydrology of the wind farm site.

Wind farm construction, operation and decommissioning involve many activities that may affect the hydrological and hydrogeological environment. These activities have been identified, their potential effects assessed, and suitable mitigating measures to be adopted have been outlined. The potential impacts caused by the proposed wind farm are highest during the construction phase.

Site Construction activities with the potential to interact with the geology, soil, and water (both surface and groundwater) on the Barlockhart Moor Site include access, trackway and turbine base construction, hard-standing construction, site compound construction, vehicle fuelling activities and wheel washing, provision of sanitary facilities and cabling.

Mitigation measures, based on best practice, have been devised to control impacts upon the receiving environment. These will be detailed within a site Pollution Prevention Plan to be implemented during all phases of the wind farm development and will be monitored by a Construction Project Manager. The plan will cover all potentially polluting activities, and all personnel working on the site will be trained in its use.

Measures to ensure no chemical or sediment contamination of the burn catchments will include design of diversion drainage ditches to divert any sediment laden runoff, and all fuels and oils to be kept in bunded containers on impervious surfaces. Regular monitoring (visual and suspended solids) of the water in the area will be undertaken.

Due to the proposed mitigation measures, the wind farm development has been assessed as having the potential to only give rise to adverse impacts of minor significance or lower in relation to soils, geology, hydrology and hydrogeology.

Noise

The noise assessment has been carried out according to ETSU-R-97, *Assessment and Rating of Noise from Wind Farms*, as referred to in PAN45, *Renewable Energy Technologies*.

Predictions of the worst-case noise levels likely to result from the operation of the wind farm were carried out, based on the proposed site layout and using the noise characteristics of Nordex N80 2.5 MW Wind Turbines.

Source/Activity	Indicative noise level dB (A)
Threshold of pain	140
Jet aircraft at 250m	105
Pneumatic drill at 7m	95
Truck at 30mph at 100m	65
Busy general office	60
Car at 40mph at 100m	55
Wind Farm at 350m	35-45
Quiet bedroom	35
Rural night-time background	20-40
Threshold of hearing	0

Table 1. Examples of Indicative Noise Levels ⁵

Noise levels are normally expressed in decibels. Noise in the environment is measured using the dB(A) scale which includes a correction for the response of the human ear to noises with different frequency content. Table 1 above shows noise from various sources and approximate levels of noise in the environment.

The assessment shows that predicted noise levels at surrounding noise sensitive properties would meet the ETSU-R-97 night-time noise limits and lower day-time noise limits, or land owner limits as appropriate, under all conditions.

Interference with Television, Radio and Microwave Paths

Based on consultation with the relevant bodies and expert technical assessments carried out by an independent consultant, the development is not expected to lead to harmful interference to any of the existing microwave and radio frequency links that cross the wind farm site.

With regard to television, prior to turbine construction, a baseline television signal strength survey will be conducted in the area potentially affected by the wind farm. A further survey will be undertaken once the wind farm is operational to establish whether the wind farm is adversely affecting reception. If adverse effects are identified, a range of technical solutions are available depending on the nature of the effect.

The 'digital switchover' for the Dumfries and Galloway region is timetabled for Summer 2009. Arqiva has advised that the digital TV transmission is more resilient than the current analogue system to interference caused by wind turbines, and on the basis that no turbines are erected prior to the digital switchover next year, then no objections to the Barlockhart Moor Wind Farm have been raised by Arqiva.

⁵ Taken from PAN45 [11.2]

Aviation Safeguarding

With regard to aviation, the following organisations have each been consulted with full details of the proposed turbine layout and specification for the proposed Barlockhart Moor Wind Farm being presented:

- Defence Estates (MOD);
- Civil Aviation Authority Directorate of Airspace Policy (CAA DAP)
- Highlands and Islands Airports Ltd
- Glasgow Prestwick Airport (via Infratil Airports Europe Ltd)

No objections have been raised by any of these organisations to the proposed wind farm development, and as such it can be concluded that the likely impact on aviation safeguarding and radar interference will be insignificant.

Public Safety

There is no recorded incident of a member of the public being injured by a wind turbine. The UK Government considers wind energy to be a 'safe' technology, requiring no special safety provisions. Experience has shown that livestock are undisturbed by the movement of the blades and will graze underneath them as well as using the towers for shelter in bad weather. Farming at Barlockhart Moor will not be affected by the development.

The wind turbines are designed and manufactured to withstand weather conditions at least as extreme as those occurring in the United Kingdom, in terms of wind speed, turbulence and temperature. The wind turbines are equipped with safety systems which will automatically shut down the machine should a fault occur

Turbine blades have been designed to discourage any build up of ice as this would cause the rotor of the turbine to go out of balance and the wind turbine would have to be automatically shut down. In the event that ice should accumulate on the turbine components the turbines would be stopped to allow time for the components to be pre-heated.

Shadow flicker can arise from the passing of the moving shadow of the turbine rotor over a narrow opening such as the window of a nearby residence. Various conditions need to be met to create a shadow flicker effect. These have been evaluated and it is concluded that shadow flicker will not cause a significant nuisance at any third party residential properties, as a result of the development. There is potential for parts of the Barlockhart Travelling Peoples Site to be affected by shadow flicker, to a maximum of 30 hours per year, but this calculation assumes a worst case scenario with the following assumptions:

- There is always full sun visible i.e. no cloud cover;
- The wind is always blowing at a reasonable speed for turbine operation;
- The wind is always blowing in such a direction as to position the turbine with the full area of the rotor showing;
- The properties within the affected area have narrow windows directly facing the turbines;
- There are no obstacles in-between the turbine and the property such as other buildings, vegetation, walls or fences etc, which may block the shadow.

As such, the likely incidence of shadow flicker is expected to be minimal. Although not anticipated to be necessary, mitigation measures can be put in place if a significant degree of shadow flicker occurs at local properties.

Conclusion

The Barlockhart Moor Wind Development proposal has the following attributes:

- A mean annual wind speed across the site in excess of 7 metres per second;
- Does not affect any statutory landscape designations;
- Does not affect any cultural heritage interests or historic environment settings;
- Does not affect any statutory nature conservation interests;
- Commercial or military safeguarding interests are not undermined, reflected in the fact that the CAA, MOD have raised no objection to the proposed wind farm development;
- Is sufficiently distant from properties for potential noise or shadow flicker effects to be minimal;
- Local connection to the electricity grid is feasible;
- The development site location has good highway and transport network links;
- Is wholly located within a 'Preferred Zone' (Zone 1) for wind development, as per published Scottish Natural Heritage (SNH) guidance.
- The site layout and design has taken into account the presence of a number of telecommunications links that cross through the wind farm site. The Ofcom recommended separation requirement between telecommunications links and turbine blades has been met, and as such the Barlockhart Moor Wind Farm is most unlikely to adversely affect telecommunications links;
- The wind farm offers the potential to produce enough clean electricity to power the equivalent households of Glenluce and Stranraer;
- Displace the emission of significant amounts of CO₂ and other gases over the life of the wind farm and thus contribute towards tackling global warming and climate change
- Support local employment and income to the local area. Local construction firms will be able to bid for around £1.5 million of construction contracts;
- A community benefits fund will be established in accordance with the Council's established protocol

The proposed wind farm is thus clearly in accordance with the principals of sustainability and will provide significant environmental, social and economic benefits.

The environmental impact assessment process indicates that the proposed development will have a relatively low impact on the immediate and wider environment. As with any scheme of this nature, there will be a change to the landscape, but If Government and regional targets on renewable energy and energy from on-shore wind are to be met, it must be accepted that wind turbines do have a place within the landscape and countryside.

The wider environmental, social and economic benefits of renewable energy schemes, whatever their scale, are a material consideration which, according to Government advise, should be given significant weight in the decision making process. Support for the development of renewable energy sources in appropriate locations is advocated in national planning policy, energy policy and within the Local Plan.

On balance, weighing up all of the above factors, it is considered that the environmental, social and economic benefits of the proposed development outweigh its relatively low impact on the local environment. The proposal is in accordance with the spirit and provisions of the national and local planning policy guidance and there are no material considerations of such weight that justify a refusal of the application.

Further Information

If you would like to find out more about the Barlockhart Moor Wind Farm proposal, you can read the full Environmental Statement at the following locations:

- Dumfries and Galloway Council, Stranraer and the Rhins Area Office, Ashwood House, Sun Street, Stranraer, DG9 7JJ
- Dumfries and Galloway Council, Newton Stewart Area Office, McMillan Hall, Dashwood Square, Newton Stewart, DG8 6EQ
- Kelvin House Hotel, 53 Main Street, Glenluce, DG8 0PP



Alternatively copies of the full application documentation including the Environmental Statement, can be purchased in paper for £150 or in CD version for £20 at the address below.

For further details about this project, please contact Matthew Hayes, Planning and Development Manager at West Coast Energy Ltd, The Long Barn, Waen Farm, Nercwys Road, Mold, CH7 4EW. Tel: 01352 757604 or email info@westcoastenergy.co.uk.