HIBERNIAN WIND POWER LIMITED
&
COILLTE

Garvagh Glebe
Wind Energy Project
County Leitrim

ENVIRONMENTAL IMPACT STATEMENT
NON-TECHNICAL SUMMARY

March 2003

Report P04J004 – R3

ESB INTERNATIONAL

Stephen Court, 18/21 St. Stephen's Green, Dublin 2, Ireland.
Telephone: +353-1-7038000 Fax: +353-1-7037186

A. THE PROJECT

Introduction

Hibernian Wind Power Limited, which is a wholly-owned independent subsidiary company of ESB Power Generation, and Coillte plan to jointly develop Garvagh Glebe Wind Energy Project at Corrie Mountain, Co. Leitrim.

The wind farm will comprise 13 wind turbines, which will be used to harness the natural energy of the wind to generate electricity.

An examination of the likely significant impacts of the project on the environment was carried out and the results are presented in this Environmental Impact Statement (EIS). The conclusions of the EIS are contained in this Non-Technical Summary. Consultations with various interested parties took place during the preparation of the EIS.

Basis of Operation

The basis of wind turbine operation is as follows:

- A yaw mechanism turns the turbines so that they face the wind
- The blades of the turbine rotate at a rate of once every 2 – 3 seconds.
- The rotation of the blades rotates a generator within a nacelle (housing) located at the turbine hub to produce the electrical power output.
- The electricity generated is fed via underground cables to electrical transformers where it is transformed to a higher voltage for supply from the site.

Sensors are used to monitor wind direction and the tower head is turned to face the wind. Power is controlled automatically as wind speed varies and the turbines are stopped at very high wind speeds to protect them from damage.

Project Output and Design

Each turbine will have a mast height of up to 70 metres (m) and three blades, each up to 40 m long. A single-storey Control Building will be provided for electrical equipment.

The wind turbines will be selected from a range of models that have been demonstrated successfully throughout Europe and certified to the highest standard. The contract to supply and construct the wind farm will be open to international competition. Because sizes of wind turbines are particular to the design of individual manufacturers, the exact rating of the turbines cannot be specified at this stage without prejudice or favour to a particular manufacturer. However, the total rated electrical output of the wind farm is expected to be about 32.5 megawatts (MW). The result of the tendering process will be the award of a contract for a particular model of wind turbine.

Construction will principally involve the following:

- Provision of turbine access tracks and cranepads and excavation and construction of reinforced concrete bases with cast-in steel foundation section for towers.
- The erection by crane of the pre-fabricated turbine towers and the installation of turbines and rotor blades.

- Construction of a Switchyard containing a Control Building / Substation and installation of underground ducts and cabling from each turbine to it.

The grid connection that will be necessary for supply of power from the site to the National Grid does not form part of this project.

B. SIGNIFICANT IMPACTS OF THE DEVELOPMENT

The possible impacts of the development were examined. This was done by assessing the environment in terms of the existing conditions, the impact of the proposed development and the measures taken to mitigate these impacts. A summary of impacts and the proposed mitigation measures, where these are appropriate, is presented in Table NTS.1.

The most significant potential impacts on the environment from the project were identified in the scoping stage as Noise, Visual Impact/Landscape and Ecology.

The aspects of the environment judged to be significantly positively affected by this development were human beings, air quality and climatic factors. Other potential impacts on the environment affecting human beings, ecology, soils and drainage, material assets and cultural heritage are examined, as well as interaction between various impacts.

There are already a number of wind farms in the area. Blackbanks No. 1 Wind Farm, which comprises four wind turbines, and Blackbanks No. 2 Wind Farm, which will comprise eight wind turbines when constructed, are immediately adjacent. Where appropriate the presence of those developments was taken into account in assessing the impacts of this proposal.

Human Beings

The proposed development will lead to employment during the construction stage.

Positive impacts are expected as regards input to the local economy.

The basic technology to be employed in the project is well understood and has been used successfully in many equivalent projects elsewhere, both nationally and internationally. There are no implications for health and safety.

If the sun is behind the rotor of a turbine a shadow that flicks on and off may be created through windows of nearby houses as the blades rotate. The absence of dwellings in the vicinity of the development ensures that this phenomenon will not arise.

Noise

Noise measurements were recorded at the site and, as expected, measurements indicated that current daytime and night-time noise levels are low and are representative of a rural location. Noise resulting from the operation of the wind turbines was predicted using computerised modelling.

There is an increase in turbine noise level as wind speed increases. However, ambient noise, the noise from wind in nearby trees and hedgerows, around buildings and over local topography, also increases with wind speed, but at a faster rate. At about 200 m distance, noise from the turbines will be masked by ambient noise, particularly at high wind speeds.

Distances from the turbines to the nearest dwellings ensure that noise impacts of significance will not arise from the construction or operation of the wind farm.

Landscape

The main views of the wind farm occur from an area covering 15 km² to the east and northeast of the site. These views open up at a distance of 1–1.5 km from the site and the visual impact of the wind farm can be seen to be relatively high.

There are no known views from the west, but there are limited views from the west-northwest and southwest from approximately 4 km distance, with low to moderate visual impact.

Beyond the main visual corridor, there are more views of the wind farm from the east and southeast. However, due to distance, limited access, and local topography and vegetation, the visual impact on these areas is insignificant or low.

There are minor and insignificant impacts on a number of listed designated areas and recreational areas arising from the proposed wind farm.

As with the existing wind farms, there will be significant views from Drumkeeran and open views from the outskirts of Tullycoly. There may be distant views from the outskirts of Killarga, but there are no known views from Drummacool, Geevagh, Ballyfarnon or Arigna.

Ecology

The site consists principally of two habitats, namely coniferous plantations and blanket bog. The coniferous forest, which is almost entirely closed canopy forest, represents a highly modified habitat. The areas of blanket bog that occur in the area are relatively intact and are fairly typical examples of mountain blanket bog. The afforested areas are of negligible scientific or conservation value and the areas of blanket bog in the eastern part of the site are considered of conservation value in at least a local context

The loss of relatively small amounts of habitat is not expected to have any significant impacts on the bird species in the area. None of these are of high conservation importance and it is considered that all species will retain a presence in the area.

There will be some disturbance to birds within the site during the construction phase but this is of minor significance. During the operation phase, the presence of the turbines is unlikely to have any significant impacts on the bird species that occur within the site or in adjacent areas. Evidence from comparable modern wind farm sites elsewhere in Europe indicates that the risk of collision by birds striking wind turbines is low. At the Garvagh Glebe site, there are no regular flight paths of potentially vulnerable birds.

With the implementation of mitigation measures, the overall impact of the proposed development with regard to ecology is assessed as not significant.

Air Quality and Climate

The wind farm will have no direct impact on air quality in the area.

The wind farm will generate electricity without leading to additional emissions of carbon dioxide (CO2), sulphur dioxide (SO2) and oxides of nitrogen (NOx). The development of renewable energy and, particularly in Ireland, wind energy with zero emissions is seen as an essential element in achieving reductions in emissions, while allowing continuing economic expansion.

Soils and Drainage

The development does not involve any discharges to soil or groundwater nor is it located in any area of geological interest. Disturbance of vegetation cover during construction could lead to short-term generation of high suspended sediment loads in streams draining the area. However, with proper control it is considered that there will be no significant adverse environmental impacts on soils beyond the areas involved in the constructed elements of the project, namely turbine foundations and access tracks.

Material Assets

Short-term effects on traffic will arise during the construction period, but there will be no effects thereafter.

The amount of forestry that will be lost as a result of the development will be insignificant relative to the size of the Coillte estate nationally, regionally and locally.

The wind farm is not anticipated to have any negative impacts on tourism. Based on experience with wind farms elsewhere, a substantial numbers of additional visitors may be attracted to the area.

The proposal will assist in meeting increases in electricity demand nationally by exporting electricity into the deregulated electricity market. It will contribute to ensuring that adequate electricity supplies are available to support economic activity and growth in a manner fully compatible with Government energy and environmental policies.

The production of electricity by the wind farm will result in savings in fossil fuel resources.

There are no implications for air navigation and there will be no impact on the safety of air traffic.

Cultural Heritage

There are no known sites of archaeological potential or interest in the area of the development and no impact will thus arise. The development does not impact on any recorded features or events of historical interest and it is not envisaged that the development will have any negative physical impact on any architectural sites.

General Issues & Interaction of Impacts

The wind farm will have no impacts in relation to surface waters, groundwaters, waste, infrastructure or other land uses.

There will be no significant interaction of impacts.

C. CONCLUSION

The equipment used will be of the most advanced technological design available. The most significant environmental impacts from the project have been examined and the best available control technologies have been applied in an integrated approach.

With the application of various mitigation measures, there are no impacts that are considered unacceptable within the context of the planning policy framework for assessing wind energy projects. It is therefore concluded that the wind farm is supported by Government policy regarding the promotion of renewable energy and is consistent with planning guidance for the development of wind energy.

Table NTS.1: Summary of Environmental Impacts

Category	Receiving Environment	Nature of Impact	Assessment of Impact	Mitigation Measures
Human Beings	Principal potential impacts relate to noise and landscape.	Refer to impacts on noise and landscape (see below)	Positive re air, imperceptible re others	See Below
	Employment	Provide employment during construction	Positive	N/A
	Health and safety	Technology well understood and used successfully in many equivalent projects	None	N/A
		Shadow flicker	Insignificant	N/A
Noise	Noise at Noise Sensitive Locations (NSL's) within limit values	Noise from construction and operation.	Imperceptible	Noise abatement incorporated into design of turbines.
Landscape	Views from an area covering 15 km² to the east and north-east of the site	Intrusion of turbines on skyline	Visual impact seen to be relatively high.	Limited size of wind farm and arrangement of the turbines related to the landform Turbines located at maximum feasible distance from residences. Equipment neutrally coloured to be blend into background. Control Building located on the site's lower grounds to be less visible
	Views from the west-north-west and south-west - approximately 4 km away	Intrusion of turbines on skyline	Low to moderate visual impact	
	Views from the north from elevated land at a distance of 6-7 km.	Intrusion of turbines on skyline	Low visual impact	
	Landscape of rural character	Introduction of engineered elements	Significant impact along roads and from properties up to 3 km away, where open views occur.	
Ecology	Dominant habitats are highly modified ones occurring commonly in the region	No loss of habitats	None	N/A
	No sites of conservation value in the vicinity of the site	No loss of habitats	None	N/A

Category	Receiving Environment	Nature of Impact	Assessment of Impact	Mitigation Measures
Air Quality and Climate	Greenhouse gases, of which carbon dioxide is the most important, in the atmosphere. Ireland is committed to limiting increases to 13% of 1990 levels.	Project will not give rise to emissions of carbon dioxide.	Positive	N/A
	Air emissions from industrial sources including power plants contributing to regional pollution problems in Europe	Project will generate electricity without emissions of nitrogen oxides or sulphur dioxide.	Positive	N/A
Soils & Drainage	Peat of variable depth	Excavation of soils during construction	Minor	Separate removal and storage of organic and mineral materials.
	Site drainage already disrupted by peat cutting activities	Increased in run-off following rainfall	Insignificant	N/A
Material Assets	Traffic levels on nearby roads	Increase in traffic during construction	Minor	Large deliveries at off-peak times.
		No increase in traffic during operation	None	N/A
	Coillte forestry	Loss of forestry	Insignificant	N/A
	Existing wind farms have attracted significant numbers of visitors	Tourism of vital importance to the national and regional economy	None	N/A
	Electricity supply and economy	Sustained economic growth facilitated by additional electricity generating capacity.	Positive	N/A
	Use of fuel in electricity production	Additional electricity generating without consumption of fossil fuel resources	Positive	N/A
	Air navigation	Interference with air navigation	None	Requirements of Irish Aviation Authority and Department of Defence to be implemented in full.

Category	Receiving Environment	Nature of Impact	Assessment of Impact	Mitigation Measures
Cultural Heritage	No significant archaeological, historical or architectural assets.	None	None	N/A