

NORTHERN WIND POWER LIMITED

**CARRICKATANE
WIND ENERGY PROJECT
COUNTY LONDONDERRY / TYRONE**

**ENVIRONMENTAL IMPACT STATEMENT
NON-TECHNICAL SUMMARY**

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ESB INTERNATIONAL

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Table of Contents

1. INTRODUCTION	1
1.1 SCOPE	1
1.2 BACKGROUND	1
2. THE PROJECT	1
2.1 PROJECT OUTPUT AND DESIGN	1
2.2 ALTERNATIVES	2
3. POLICY CONTEXT	3
3.1 ENERGY POLICY	3
3.2 PLANNING POLICY	3
4. SIGNIFICANT IMPACTS OF THE DEVELOPMENT	3
4.1 HUMAN BEINGS AND SOCIO-ECONOMICS	4
4.2 NOISE	4
4.3 SHADOW FLICKER	5
4.4 ECOLOGY	5
4.5 LANDSCAPE	6
4.6 AIR QUALITY AND CLIMATE	7
4.7 SOILS AND DRAINAGE	7
4.8 MATERIAL ASSETS	8
4.9 ARCHAEOLOGY	9
4.10 GENERAL ISSUES & INTERACTION OF IMPACTS	10
5. CONCLUSION	10

1. INTRODUCTION

1.1 Scope

Northern Wind Power Limited, which is a wholly-owned independent subsidiary company of Electricity Supply Board (ESB), intends to develop Carrickatane Wind Energy Project at a site that forms part of Slievekirk Mountain and lies about 4 km from Donemana, Co. Tyrone.

The wind farm will comprise 15 wind turbines, which will be used to harness the natural energy of the wind to generate electricity.

An Environmental Impact Assessment has been prepared to examine the likely significant impacts of the project on the environment. The results are presented in this Environmental Impact Statement (EIS), which supports a full planning application. 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.

1.2 Background

Ireland has one of the best wind resources in the world but its exploitation has lagged developments elsewhere in Europe.

By the end of 2002, approximately 32,000 megawatts (MW) of wind energy generating capacity had been installed globally. Growth has been particularly strong in Europe but to date Ireland's contribution to the installed capacity has been very small. Only approximately 170 MW of wind energy capacity had been installed in Ireland (north and south) by the end of 2003. This contrasts with about 3,000 MW of wind energy capacity in Denmark, despite Ireland's better wind resource.

Renewable sources of energy, such as will result from the Carrickatane Wind Energy Project, offer sustainable alternatives to our dependency on fossil fuels, a means of reducing harmful greenhouse emissions and opportunities to reduce our reliance on imported fuels. For these reasons, European, UK and Northern Ireland policy supports the increased use of renewable energy.

2. THE PROJECT

2.1 Project Output and Design

Turbines will have a mast height of about 70 metres (m) and three blades, each up to 45 m long. A fenced Switchyard will contain a single-storey Control Building and a Substation with electrical equipment.

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 3 – 5 seconds, depending on wind speed.
- 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 to the electricity grid.

Sensors are used to monitor wind direction and the tower head is turned to line up with the wind. The turbines will commence operation at wind speeds of about 4 metres per second (m/s), will attain maximum output at about 15 m/s and will shut down when the wind speed reaches about 25 m/s to protect them from damage. Power will be controlled automatically as wind speed varies.

The wind turbines will be selected from a range of models that have been demonstrated successfully throughout Europe and certified to the highest international 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 rated electrical output is expected to be up to approximately 45 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 Control Building / Substation within a Switchyard and installation of underground ducts and cabling from each turbine to it.
- Installation of a meteorological mast to measure wind speeds.

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.

The project will generate almost 150,000,000 kWh (units) of electricity per annum.

There are a number of other wind farm proposals in the vicinity.

2.2 Alternatives

In the short - medium term at least, current and future demand for electricity generation capacity in Northern Ireland will remain predominantly supplied by fossil fuel plants. However, renewable and alternative sources of power will play an increasingly important role in meeting power needs in the future and in Northern Ireland wind energy currently represents by far the most significant viable option for electricity generation from renewables.

The choice of the Carrickatane site is the result of a four-stage systematic site selection process that examined site suitability based a number of criteria. Carrickatane is one of the limited number of sites at which it has been determined that a wind farm development is viable and will be pursued. Amongst the factors that determine the suitability of this site are wind speed, the absence of designation for nature conservation, favourable ground conditions for civil engineering construction, minimum interference with established land uses, distance from heavily populated centres and the acceptable levels of environmental impacts.

The proposed layout was developed in an iterative manner taking on board the various constraints in the technical, planning, commercial and environmental aspects of the proposal. Avoiding interference with a communications link that passes through the site was a key issue in developing the proposed arrangement. Alternative sizes and arrangements for wind turbines convey no significant environmental benefits.

3. POLICY CONTEXT

3.1 Energy Policy

There is strong support for renewable energy development at European, UK and Northern Ireland levels.

The development of renewable energy, including energy from wind, is a central aim energy policy at European level. The EU Renewables Directive has targets regarding increasing the share of green electricity from 14% to 22% of gross electricity consumption by 2010, doubling the share of renewables energy from 6% to 12% of gross energy consumption in Europe by 2010 and compliance with the commitments made the 1997 Kyoto Protocol on reducing greenhouse gas emissions. The EU's Climate Change Programme proposes a range of policies and measures to deliver its climate change targets under the Kyoto Protocol.

The UK's target under Kyoto is to reduce a group of six greenhouse gases to 12.5% below 1990 levels in the period 2008 – 2012. In addition, the UK has set a domestic target of reducing carbon dioxide emissions (the main contributor to global warming) to 20% below 1990 levels by 2020 and is to cut these by some 60% by 2050. The UK Government is committed to develop renewable sources of energy.

The energy strategy for Northern Ireland for the next 10 years was published in June 2004 and followed the Energy (Northern Ireland) Order of 2003. The Strategy requires that by 2012 at least 12% of all electricity consumed in Northern Ireland be obtained from indigenous renewable energy sources and foresees a Renewables Obligation in Northern Ireland, which will require that a proportion (rising to 6.3% of consumption by 2012) of the total supply of electricity to consumers in Northern Ireland must be renewable electricity.

3.2 Planning Policy

There is no single policy that addresses all aspects of alternative energy proposals or wind energy developments in particular. Energy developments are not specifically addressed in the Derry and Strabane Development Plans.

Most existing policies have limited regard to the Government's energy and environmental policies. However, it is evident that in the Regional Development Strategy and the Planning Strategy for Rural Northern Ireland there is a presumption in favour of approval for wind farm developments.

4. 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 the

Table – Summary of Environmental Impacts.

The most significant potential impact on the environment from the project was identified at an early stage as Visual Impact/Landscape. Noise and Ecology were also recognised as being key issues, albeit that the nature of the site rendered them likely to be insignificant in this instance.

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, soils and drainage, material assets and cultural heritage are examined, as well as interaction between various impacts.

4.1 Human Beings and Socio-economics

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

It is envisaged that the project will involve an investment of about £30M and positive impacts are expected as regards input to the local economy. This will particularly arise during the construction phase when there will be requirements for plant and machinery and for construction materials. In the longer term there will be income to landowners from lease of lands with a knock-on effect to the local economy and an ongoing requirement for maintenance support, services and equipment. The payment of local authority rates will provide indirect long-term benefit for the broader community

The electricity generated by the proposal will make a significant contribution to national availability of electricity supplies, being equivalent to the annual consumption of almost 30,000 homes in perpetuity.

Amongst the benefits of electricity generation from wind are considered to be its contribution to environmental sustainability and displacement of imported fossil fuels. The project will displace the equivalent of approximately 40,000 t of fossil fuel imports annually. 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.

All relevant health and safety legislation will be adhered to during all stages of the project from construction through to decommissioning. Extensive operational experience has shown that the health and safety record of wind turbines is exceptionally high, being better in most instances than other forms of electricity production. The basic technology to be employed in the project is well understood and is in an advanced state of development. It has been used successfully in many equivalent projects both nationally and internationally. There are no implications for health and safety.

4.2 Noise

Noise measurements were recorded in the vicinity of the site. As would be expected, ambient noise levels are largely determined by the wind regime.

Construction works that could give rise to off-site noise will effectively be limited to a small amount of earth moving, excavating and concreting. Noise levels resulting from construction of the wind farm were calculated for various distances from the site and it was concluded that noise levels will be well within the limits commonly imposed for construction sites.

Noise resulting from the operation of the wind turbines was calculated for all nearby

residences and assessed in the context of the recognised target noise levels. It was calculated that noise levels attributable to the turbines will be below target noise levels at all residences and there will be no discernible impact.

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. Thus, at the nearest houses, noise from the turbines will be completely masked by ambient noise, particularly at high wind speeds. Ambient noise is low in calm conditions with wind speeds of 0 – 4 m/s and turbine noise could be more discernible. However, the turbines are not in operation in these conditions.

The turbines are sufficiently distant from dwellings that noise impacts of significance will not arise from the construction or operation of the wind farm.

4.3 Shadow Flicker

Wind turbines, as with trees or any other tall structure, can cast long shadows when the sun is shining and is low in the sky. If the sun is behind the rotor of a turbine a shadow that flicks on and off may be created through a window of a nearby house as the blades rotate.

This phenomenon, which is known as the shadow flicker effect and is generally only observed in the period after dawn and before sunset as the sun is rising and setting, lasts for just a short period and depends for its occurrence on a combination of many circumstances.

In this instance shadow flicker analysis has shown a potential for shadow flicker effect at a number of residences. However, with the simultaneous occurrence of all required circumstances unlikely to arise with any frequency, it is considered that shadow flicker is unlikely to cause a nuisance. In any event, it is possible to shut down selected turbines for the relevant periods during which the phenomenon could arise.

4.4 Ecology

As might be expected, the habitats and vegetation at the site are upland to montane in character and consist of a range of communities from grassland through wet heath to bog. There appears to be a long history of cutting of the bog, as well as reclamation of bog/heath for pasture. Much of the site is used for rough grazing by sheep and/or cattle, with more intensive grazing in the south-eastern sector. A small stand of conifers occurs within the site.

The site is neither within nor adjoining any area designated for nature conservation. However, there are two designated sites within 5 km of the study area, but the project will have no direct or indirect impacts on these.

No flora species of conservation significance occurs or has been recorded within the site in the past. No mammal species of conservation importance occurs, or is likely to occur, within the site. Whilst widespread in Northern Ireland, the presence of breeding frogs within the site is of some note as the frog is listed as a Red Data Book species on account of the population in Ireland being of international importance.

Any elements of habitats of conservation interest that are present are poorly developed, incomplete and fragmented.

A desk review, field survey and habitat assessment indicate that the site and surrounding area does not support any bird species of conservation importance (such as hen harrier, merlin, wild geese). Whilst red grouse could possibly occur, the frequency of heather within the site is low and the species has not been recorded in the area in recent times.

The development will lead to a permanent loss of habitats and some disturbance to surrounding areas, although the actual amount of habitat lost in the context of the site will be relatively low. As the various habitats at this site are not considered of any significant conservation importance, and as all of the habitats and vegetation types will still be represented in the site, this impact is rated only of minor significance.

Any localised changes in hydrology would have little noticeable effect on the existing mosaic of vegetation types.

The aquatic life within a small tributary stream of the River Faughan at the northern boundary of the site could be affected by entry of potentially polluting substances, such as concrete washings and oils/lubricants, as well as suspended peat particles, during the construction phase. Standard precautions will be taken to prevent water pollution incidents during the construction phase.

The loss of relatively small amounts of habitat would not be expected to have any significant impacts on the mammal, amphibian and reptile species that inhabit the area and all should continue to have a presence in the vicinity. Similarly, it would not be expected to have any significant impact on the populations of any of the common bird species that presently frequent the site and all would be expected to retain a presence in the immediate area. Field survey and desk review indicates that there are no bird species of conservation concern associated with the site or its immediate surroundings.

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. None of these are of high conservation importance and it is considered that all species will retain a presence in the area. 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 Carrickatane site, there are no regular flight paths of potentially vulnerable birds. It is considered unlikely that any losses could be of a scale whereby there would be significant adverse effects on the local bird populations.

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

4.5 Landscape

The site is located on the lower hills of Slievekirk Mountain, which is characteristic of the gently rounded hills that form the northern foothills of the Sperrin Mountains.

Landscape designations in the area include part of the A5 Strabane – Derry route, the A6 Derry – Belfast route, an Area of High Scenic Value in the valley of the River Faughan, an Area of Local Nature Conservation and Amenity Importance south of Claudy, the Sperrins Area of Outstanding Natural Beauty to the south and an area designated as Green Belt around the city of Derry.

The closest and most open views of the wind farm occur from an area to east of the site within a 2-5 km radius. In most cases, all turbines are largely or partly visible. The principal visual zone lies south-east, south, south-west, west and north-west of the site.

Intervening topography restricts long distance views from the north, north-east and east.

While there are some views of the proposed wind farm from the A5 between Strabane and New Buildings, most are largely screened by intervening vegetation and the presence of Gortmonly Hill. Views from B48 are open, whereas views from the B49 are limited. There are open views from the R236 and R265 from the western side of River Foyle in Co. Donegal.

There will be open views of the proposed turbines from parts of Donemana, particularly from its outskirts, and long distance views from the immediate outskirts to the east and west of Derry city. The wind farm will be partially visible from New Buildings.

Within the principal visual zone, there are views of Carrickatane as well as the proposed wind farms at Gortmonly Hill and Eglis Hill from distances of 2–5 km. However, the proposed combined total of 30 turbines in these developments will not overly negatively affect the landscape character of the area as they are located in discernibly separate hilltops. Each wind farm is small enough to remain in scale with the landscape.

Where there are views of the above together with the separate proposals at Slievekirk and Curryfree, effects on landscape character can be high. However, the nature of the topography results in many viewpoints with limited views of the turbines, or no views at all.

4.6 Air Quality and Climate

Having no environmental emissions to atmosphere, the wind farm will have no direct impact on air quality in the area.

As well as impairing local air quality, long-range atmospheric transport of sulphur dioxide (SO₂) and oxides of nitrogen (NO_x) can contribute to regional problems of acidification and eutrophication of soils and waters and to air pollution over a wide area. The Government has entered into agreements at EU and international level to control national emissions of these gases. It also has international obligations regarding carbon dioxide (CO₂) emissions, the primary greenhouse gas associated with global warming, and has set its own targets in this area.

The wind farm at Carrickatane will generate almost 150,000,000 kWh of electricity per annum without leading to additional emissions of carbon dioxide, sulphur dioxide or oxides of nitrogen. 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.

4.7 Soils and Drainage

Geological mapping indicates the site to be underlain by the Claudy Formation and that over the majority of the site bedrock is at or near the surface or is covered by peat. The site is not within or close to a regionally important geological site and does not appear to possess significant features of geological value.

With its elevated location and slope falling in all directions approximately radially, groundwater flow within the site may be considered almost radial. At a large scale, groundwater flow beneath most of the site would be westwards towards Burn Dennet and the River Foyle and probably towards the north beneath the northern part of the site.

No significant groundwater would be expected in peat deposits. Mapping indicates that

the groundwater beneath the site falls in vulnerability type C, which is for geological formations with negligible permeability that are generally regarded as not having exploitable quantities. Mapping also indicates the site to be underlain by impermeable rocks, generally without groundwater except at shallow depth.

Ground and topographical conditions are generally not unfavourable for civil engineering construction and there are no obvious constraints to the safe development of a wind farm at this site.

The development does not involve any discharges to soil or groundwater. Disturbance of vegetation cover during construction could lead to short-term generation of high suspended sediment loads in streams draining the site. However, specific mitigation measures such as silt traps will be employed and it is considered that with proper control there will be no significant adverse environmental impacts beyond the areas involved in the constructed elements of the project, namely turbine foundations and access tracks.

An increase in run-off following rainfall will occur. However, the extent of the lands at the site that will be impacted by the development is so small relative to the total land area that this is not considered significant.

4.8 Material Assets

Roads and Traffic

The locality has a network of country roads that serves a rural community that is reliant mainly on agriculture. These roads are used by this community for domestic and agricultural purposes.

Short-term effects will arise during the construction period and will entail potential disturbance to other road users and deterioration of the road surface.

The average Heavy Commercial Vehicle (HCV) traffic will be less than 20 daily, taking into account the return of empty trucks. Peak traffic will arise on 15 non-consecutive days when concrete for turbine foundations is delivered. Each will involve up to 30 deliveries or 60 HCV movements.

Delivery of wind turbine components will use special transporter vehicles. Public roads will be affected by these deliveries and an independent survey will determine the most appropriate route. Any necessary minor road improvements such as road widening at bends, provision of passing bays, etc, necessary to allow passage of the long load vehicles will be agreed with the Roads Service, with whom a joint road condition survey will be carried out. Any local road improvements will ultimately benefit the local population.

The additional traffic arising during operation will be limited to light vehicles used during routine inspection and preventive maintenance. This will be indistinguishable from other traffic and there will be no significant impact in the long term.

There is no evidence from Ireland or elsewhere to indicate that wind turbine towers or moving wind turbine blades endanger public safety by reason of traffic hazard.

Appropriate traffic management measures will be agreed in advance for delivery of turbine components. Residents along the chosen access route will be advised of any particularly busy periods.

Tourism & Recreation

The site is not within a significant tourism area in its own right and the wind farm is not anticipated to have any negative impacts on tourism. Whereas experience at other wind farms in Northern Ireland has been that visitors are attracted to wind power projects, because of level of familiarity with wind farms that has developed, significant numbers of additional visitors are not anticipated.

Independent research has shown that the presence of wind farms makes no difference to holidaymakers' enjoyment of their holiday and wind farms were not seen as having a detrimental effect on tourist visits.

Implementation of on-site mitigation measures during construction of the wind farm will ensure that the development will pose no threat to fisheries interests, which are a significant recreation locally.

Air Navigation

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

Electromagnetic Interference

There are a number of microwave links in the vicinity of the site and one microwave link passes through it. The site layout has been developed to take this into account and an exclusion zone of 100 m centred on the line of the link has been incorporated into the design. the required buffer

Interference with television reception is not anticipated. However, in the event that the wind farm development does lead to such interference, all necessary measures will be undertaken to fully eliminate any negative impact.

4.9 Archaeology

Intensive Neolithic and Bronze Age occupation has been identified, largely by megalithic tombs, in both in Co. Tyrone and Co. Derry and stone circles have also been identified in the upland areas of both counties.

A total of 15 sites of cultural heritage potential were identified within the study area for Carrickatane wind farm.

One site is the location of a complex of cairns and is an area of high archaeological potential. Because of the possibility that the closest turbine to this site could impact directly on any of its identified elements and the high potential for the presence of unknown deposits, a programme of archaeological investigation will be undertaken in advance of wind farm construction. This will determine the presence and/or absence, nature and significance of any surviving archaeological deposits and to indicate the scope and scale of any resolution works.

While land reclamation and improvements have reduced the potential for the presence of subsurface archaeological features, areas of unimproved peat bog survive within the study area and these have a high potential for the presence of unknown sub-peat archaeological sites, especially those of a prehistoric date. On that basis, an archaeological watching brief will therefore be implemented for a number of turbines and their associated infrastructure works.

With the implementation of the proposed mitigation measures the development will not result in significant environmental impacts.

4.10 General Issues & Interaction of Impacts

The wind farm will have no impacts in relation to surface waters, waste or other land uses. There will be no significant interaction of impacts.

5. CONCLUSION

The equipment used will be of the most advanced technological design available. The 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 proposed 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.

Summary of Environmental Impacts

Category	Receiving Environment	Nature of Impact	Assessment of Impact	Mitigation Measures	
Human Beings & Socio-economics	Employment	Employment during construction	Positive	N/A	
	Economic activity	Input to local, regional and national economy	Positive	N/A	
	Electricity supply	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	
	Health and safety	Technology well understood and history of successful use	None	N/A	
Noise	Noise representative of rural environment	Noise from construction of wind farm.	Insignificant	Turbines at sufficient distant from residences; noise abatement incorporated in design of turbines	
		Noise from wind farm operation	Insignificant		
Shadow Flicker	Nearby residences	Potential recurring shadows in windows under certain conditions	Insignificant	Turbine shut down, if necessary	
Ecology	No sites designated for nature conservation	Potential direct or indirect interference	None	N/A	
	Habitat at site largely of low ecological value	Small loss of habitat	Not significant in context of overall site	Careful location of turbines and access tracks	
	No mammals, amphibians or reptiles of conservation importance	Changes in populations due to loss of habitats	Insignificant		
	Local bird populations		Disturbance during construction	Temporary impact	N/A
			Disturbance during wind farm operation	Avoidance initially, reducing with habituation	N/A
			Potential collision with wind turbines	Low to negligible likelihood	

Category	Receiving Environment	Nature of Impact	Assessment of Impact	Mitigation Measures
Landscape	Views from an area to southeast through to north-west of the site	Visibility of turbines where open views occur	Visual impact seen to be generally moderate with higher potential impact at closer locations.	Wind farm capacity achieved with optimum number and size of turbines Arrangement of turbines related to the landform
	Views from road network	View from A5 Strabane – New Buildings	Turbines partially visible but generally screened	Turbines located at maximum feasible distance from residences Equipment neutrally coloured to be blend into background Fencing to Switchyard coloured to blend into landscape
		B48 and B49 Regional Road in Co. Donegal	Open, partial and intermittent views	
	Views from built-up areas	Views from Donemana	Turbines visible	Turbines partially visible
		Intermittent views from Derry, Strabane, New Buildings with potential intrusion on local skyline		
	Impact on designated sites and recreation areas	Distinct and partial views of the turbines	Distant views from Cycle Route 92 and open views from Cycle Route 93	
Air Quality and Climate	Air quality meets current and future standards	No emissions from project	None	N/A
	National commitment to limit emissions of greenhouse gases	Project will not give rise to emissions of carbon dioxide	Positive	N/A
	Air emissions from industrial sources 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	Generation of high suspended sediment loads during construction	Potential short-term impact	Silt traps and other protective measures

Category	Receiving Environment	Nature of Impact	Assessment of Impact	Mitigation Measures
Material Assets	Traffic on nearby roads	Increase in traffic during construction	Minor	Develop traffic management plan; schedule large deliveries for off-peak times
		Long-load delivery of turbine components	Minor	
		No increase in traffic during operation	None	N/A
	Tourism of vital importance to the national and regional economy	No impact – not a significant tourism area	None	N/A
Material Assets	Air navigation	Interference with air navigation	None	Implementation of requirements of Civil Aviation Authority and Dept. of Defence
	Telecommunications signals	Interference with TV and other signals	None	Provision of turbine exclusion corridor within site
Cultural Heritage	Known sites of cultural heritage significance	Direct or indirect interference and disturbance	None	N/A
	Unknown sites of cultural heritage significance	Potential interference and disturbance	None predicted	Programme of investigation at one site and archaeological watching brief for identified turbines



