19. INTERACTION OF IMPACTS

19.1 INTRODUCTION

In addition to the requirement to describe the likely significant effects of the proposed development on the different elements of the environment, it is also required to consider the interaction of those effects.

Direct, indirect, cumulative, and interactive impacts were considered during the siting of turbines to minimise impacts relating to the human environment, to noise, to shadow flicker, to terrestrial ecology, to aquatic ecology, to landscape, to atmospheric emissions and air quality, to geology and soils, to hydrology, hydrogeology and water quality, to roads and traffic, to material assets and to cultural heritage. Relevant planning and policy considerations were also considered.

The remaining interactions and inter-relationships are considered by a means of the matrix presented in Table 19.1. Each aspect of the environment which is considered in detail in the appropriate sections of the EIS is cross tabulated against all other aspects that have also been considered.

Where an interaction is considered to be both likely and significant, it is given a reference number in the matrix and detail of the interaction is discussed herein.

Mitigation measures in relation to primary impacts are outlined in the relevant Section of the EIS. Mitigation measures are not repeated herein and only mitigation that is additional to the primary impacts is described.

19.2 INTERACTION

1: Human Beings / Noise

In terms of the construction noise, any impacts arising will be short-term in nature and a perceptible increase in noise sufficient to cause harm to residential amenity will not result given the distance from the site to the existing properties in the area. Noise impacts may occur during the operational phase and mitigation measures have been outlined to minimise these impacts in relation to noise impacts on the human environment

No further mitigation measures are proposed.

2: Human Beings / Shadow Flicker

When a wind farm is operational there is potential for shadow flicker to arise, depending on the simultaneous occurrence of a number of unrelated conditions. The potential for shadow flicker is very low at properties greater than 10 rotor diameters (1,120 m for the largest size of wide turbine rotor under consideration) from a wind turbine. Potential occurrence in relation to the human environment was assessed for all properties within the appropriate distance of a turbine at Grousemount, regardless of their actual susceptibility to actual occurrence. Results indicated that significant impacts will not arise.

No further mitigation measures are proposed.

3: Human Beings / Landscape

Impacts on the landscape are commonly recognised as being the most significant impacts of this type of development. Photomontages were generated for 24 viewshed reference points selected to represent the human environment in terms of the local community and

the nearest and largest potentially affected settlements in the wider receiving environment.

The assessment found that in all areas outside of the Upper Roughty River Valley, including important recreation and tourist routes for walking, cycling and driving, passing though the receiving environment, visual exposure to the wind farm would be very limited. The wind farm is not uncharacteristic when set within the attributes of the receiving landscape. It represents a continuation of wind farm development in this area and cumulative impacts are not considered significant.

No further mitigation measures are proposed.

4: Human Beings / Roads & Traffic

The development will generate traffic during the construction phase and the number of heavy traffic movements on and off the site has been calculated as being the equivalent of approximately 30 HCV traffic movements daily over an 18-month period. Rather than occurring uniformly throughout the construction period, traffic movements will likely peak on the seven non-consecutive days on which concrete for turbine foundations will be delivered. Each foundation will involve up to 55 deliveries or 110 vehicle movements.

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

There will be no effects thereafter, but effects, which will be temporary and short lived, on the road network immediately local to the site will arise during construction. While the calculated level of additional traffic is low, some inconvenience will be created for other users. However, the low level of traffic in the general area means that only a limited number of existing users will be impacted.

Any road improvements that may be undertaken to facilitate the development will improve overall road safety for all road users in the long term.

No further mitigation measures are proposed.

5: Human Beings / Material Assets

Because it is not a significant tourism area in its own right, the wind farm development will not have any significant adverse impacts on tourism assets. There is no potential to impact on the flagship tourism attractions in Co. Kerry.

In the very unlikely event of interference with television reception, all necessary measures will be undertaken by the developer in accordance with a standard protocol that the developer has applied successfully at other equivalent developments to fully eliminate any negative impact.

No further mitigation measures are proposed.

6: Terrestrial Ecology / Landscape

Ecologically designated areas in the surrounding area were identified as comprising NHAs, pNHAs, SACs and SPAs. An NHA adjoins the site with a pNHA being part of the wind farm land ownership but excluded from the development area. There will be close-up views of the wind farm from these sites. However, these sites and other sites that are more remote and from which long-distance and mid-distance views will be possible are designated for their nature conservation value, which is not impacted upon by the visibility of the wind farm development.

There will be a combination of long-distance and mid-distance views from the majority of

the identified sites. However, the sites are designated for their nature conservation value, which is not impacted upon by the visibility of the wind farm.

No further mitigation measures are proposed.

7: Aquatic Ecology / Geology & Soils

The primary geotechnical consideration is the stability of sloping ground at the site. A potentially serious adverse impact on flora and mammals could arise if a land slip was to occur. Significant detailed investigation of the extent and depths of soft deposits has been carried out throughout the site, and a peat stability risk assessment was undertaken. It was concluded by geotechnical specialists that the application of mitigation measures will allow the development to be completed safely from a geotechnical perspective. re are no obvious topographical or geotechnical constraints to the safe development of the wind farm.

No further mitigation measures are proposed.

8: Landscape / Material Assets

The landscape assessment concluded that the overall image presented by the wind farm development is not a negative one. In that context it is not considered that the visual impact of the proposed development will negatively impact on existing or future tourism facilities in the area.

One of the main findings of the Irish public's attitude to wind energy was that those with direct experience of wind farms in their locality do not in general consider that they have had any adverse impact on the scenic beauty of the area or on tourism. Independent research elsewhere has confirmed that the presence of wind farms makes no difference to tourists' enjoyment of their holiday.

No further mitigation measures are proposed.

9: Landscape / Cultural Heritage

The nature of the development is such that indirect impacts associated with visual intrusion will result at cultural heritage sites in the broader landscape. The extent of visibility is determined by local topography, vegetative screening and the effects of distance. Although there are no mitigation measures available to reduce impact arising, it is considered that any impacts arising would not be significant.

No further mitigation measures are proposed.

10: Atmospheric Emission & Air Quality / Roads & Traffic

The primary air quality issue relates to dust potentially arising from a number of activities that include construction transport within and off the site. Traffic associated with the development will also give rise to exhaust emissions during the construction phase. The potential impact is not considered significant in the context of the extent of traffic movements arising and the existing air quality in the area.

No further mitigation measures are proposed.

11: Geology & Soils / Hydrology, Hydrology & Water Quality

The site lies within the upper catchment of the Roughty River and the absence of suitable pollution control measures could result in potential pollutants entering drains, thereby affecting water quality downstream of the site. The significance of the Roughty River is recognised and specific mitigation is outlined for application in the excavation and removal

of soils for the construction of permanent features such as cranepads and turbine foundations and in the development of borrow pits.

No further mitigation measures are proposed.

12: Geology & Soils / Cultural Heritage

Excavations of soils during construction have the possibility of uncovering previously unrecorded features and material of archaeological interest and potential. Archaeological monitoring of groundworks is proposed.

No further mitigation measures are proposed.

19.3 EPA GUIDANCE

The Environmental Protection Agency's (EPA) Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) are designed to accompany the Guidelines on the information to be contained in Environmental Impact Statements, also published by the EPA.

The Advice Notes contain greater detail on many of the topics covered by the Guidelines and offer guidance on current practice for the structure and content of Environmental Impact Statements. They are divided into five sections, each providing detailed guidance on specific aspects to be considered in the preparation of an EIS.

Section 3 provides guidance on the topics which would usually be addressed when preparing an EIS for a particular class of development, highlighting typical issues which arise. The projects are grouped into 33 generic types, which have similar development or operational characteristics.

Project Type 33 addresses installations for the harnessing of wind power for energy production and the guidance on interaction of impacts for this project type notes as follows:

> *The interaction of noise, visual impacts, access to underdeveloped areas and effects on ecology can combine to affect perceptions of the integrity of natural areas.*

At Grousemount the magnitude of separate impacts on the listed environmental factors is not such as to combine to affect the perception of integrity of a natural area.

The Advise Notes make no reference to developments similar to the underground cable from Coomataggart Substation to Ballyvouskill Substation.

19.4 CONCLUSIONS

In summary, the consideration of Interaction of Impacts has concluded that no additional potentially unacceptable environmental impacts will arise as a result of the construction and operation of Grousemount Wind Farm, provided that the recommended mitigation measures are implemented.

Table 19.1: Potential Interaction of Significant Environmental Impacts

Interactions	Human Environment	Noise	Shadow Flicker	Terrestrial Ecology	Aquatic Ecology	Landscape	Atmospheric Emissions & Air Quality	Geology & Soils	Hydrology, Hydrogeology & Water Quality	Roads & Traffic	Material Assets	Cultural Heritage
Human Environment		1	2			3				4	5	
Noise	1											
Shadow Flicker	2											
Terrestrial Ecology						6						
Aquatic Ecology								7				
Landscape	3			6							8	9
Atmospheric Emissions & Air Quality										10		
Geology & Soils				7					11			12
Hydrology, Hydrogeology & Water Quality								11				
Roads & Traffic	4						10					
Material Assets	5					8						
Cultural Heritage						9		12				