



ENVIRONMENTAL BALANCE IN DESIGN AND CONSTRUCTION

**ELEMENT POWER IRELAND LTD.**

**ENVIRONMENTAL IMPACT STATEMENT FOR THE  
PROPOSED MAIGHNE WIND FARM IN COUNTY KILDARE  
AND COUNTY MEATH**

**VOLUME 2 – MAIN EIS**

**CHAPTER 17 - INTERACTIONS**

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## 17 INTERACTIONS OF THE FOREGOING

This Chapter considers the potential for interactions and inter-relationships between one aspect of the environment and another which can result in an impact being either positive or negative, as well as having varying levels of significance.


Direct, indirect, cumulative, and interactive impacts were considered during the siting of turbines to minimise impacts on landscape and visual, the human environment, geology and slope stability, flora and fauna, hydrology, water quality, shadow flicker and archaeological, architectural and cultural heritage. Other factors and constraints such as the requirements of County Development Plans were also considered.

The remaining interactions and inter-relationships after the optimisation of the layout design with respect to the various aspects of the environment are discussed, where relevant in each section and in this chapter. Table 17.1 herein provides a matrix showing the key interactions and inter-relationships between the key environmental aspects of the proposed development.

Table 17.1 also provides further detail and examples of the diverse range of interactions and inter-relationships between the key environmental aspects.

Table 17.1: Summary of Interactions & Inter-relationships between the Key Environmental Aspects

	Air Quality & Climate	Noise & Vibration	Flora & Fauna	Geology & Slope Stability	Hydrology	Water Quality	Human Environment	Shadow Flicker	Traffic & Transportation	Archaeological, Architectural & Cultural Heritage	Landscape & Visual	Telecommunications & Aviation
Air Quality & Climate												
Noise & Vibration												
Flora & Fauna												
Geology & Slope Stability												
Hydrology												
Water Quality												
Human Environment												
Shadow Flicker												
Traffic & Transportation												
Archaeological, Architectural & Cultural Heritage												
Landscape & Visual												
Telecommunications & Aviation												

 = interaction or inter-relationship

 = no interaction or inter-relationship

INTERACTION	DESCRIPTION
Human Environment, Air Quality & Climate, Traffic & Transportation	Impacts on air quality during the construction phase may occur due to dust emissions from construction activities. Impacts may also occur through increased traffic and associated exhaust emissions from construction traffic. These interactions were therefore considered as part of the EIS, with suitable mitigation measures provided to minimise these potential impacts. The indirect impacts on climate from greenhouse gas emission displacement was also considered during the assessment.
Noise and Vibration, Human Environment, Traffic & Transportation	Noise impacts may occur during both the construction and operational phases. During construction, noise impacts will be associated with construction plant and increased traffic. During operation, there is the potential for noise impacts from the turbines. There is therefore the potential for increased noise to impact on local residents and the general public. These interactions were therefore considered as part of the EIS. Mitigation measures have been carefully designed in order to minimise these impacts, particularly potential noise impacts during the operational stage of the project and particularly in relation to the assessment of noise impacts on the human environment.
Flora and Fauna, geology & slope stability, hydrology, Water Quality	There are direct links between these key environmental aspects. Impacts on flora and fauna during the construction phase could include disturbance to birds and mammals from loss/changes in habitat. The hydrological regime could also be altered, through increased flooding and sedimentation/pollution of watercourses, which in turn could impact on flora and fauna. Excavations introduce the risk of increased sedimentation and any peat/slope stability issues include a risk of slippage, which would both impact on flora and fauna and the hydrological environment. These risks pertain primarily to the construction phase of the project. Given the direct links between these aspects, they were considered in the chapters that support all of these topics in recognition of the fact that impacts on one aspect of this complex system may have knock-on, indirect impacts on other aspects.
Noise and Vibration, Flora and Fauna	Noise impacts during construction (from construction plant and increased traffic) and operation (operational turbine noise) has the potential to impact on local flora and fauna (birds and mammals) in the surrounding environment. These interactions were therefore considered in the EIS, particularly in relation to assessing suitable mitigation measures to reduce the impacts.
Landscape & Visual, Human Environment	The change in the landscape, from the erection of turbines, and the associated visual impact of this change, has the potential to impact on local residents, tourists and the general public. The interactions between these environmental aspects was carefully considered in the EIS, particularly in the design of the turbine layout. Detailed zone of theoretical visibility maps (ZTV's), route screening analysis and photomontages were prepared to assess the level of impact.
Shadow Flicker, Human Environment	The potential for shadow flicker could impact on local residents in the vicinity of the turbines. The interaction between the impacts of shadow flicker on the human environment was considered, by maintaining, where possible, minimum separation distances between turbines and dwellings, in the design of the turbine layout and in the careful design of mitigation measures to minimise impact.
Landscape and Visual, Archaeological, Architectural and Cultural Heritage	The introduction of turbines into the landscape may impact on the setting of archaeological, architectural and cultural heritage sites in the surrounding environment. These interactions have been considered in the EIS, particularly in the design of the turbine layout.

INTERACTION	DESCRIPTION
Archaeological, Architectural and Cultural Heritage, Human Environment	Impacts on the archaeological, architectural and cultural heritage of the surrounding environment, both during construction and operation, has the potential to impact on the human environment. These impacts could be through the excavation of previously unknown features, or, during operation of the wind farm, in a change in the setting of the feature, due to changes in landscape. These interactions were considered in EIS, both in the design of the turbine layout, in the assessment of noise impact and in the design of suitable mitigation to protect the archaeological, architectural and cultural heritage during construction.
Hydrology, Water Quality and Human Environment	During the construction phase there is the potential for increased sedimentation and pollution of local watercourses. The introduction of increased impermeable/hardstand areas also has the potential to increase the risk of flooding. These aspects would impact on the human environment. These interactions therefore were considered in the EIS, particularly in relation to designing suitable mitigation measures to minimise impact.
Traffic and Transportation, Water Quality	During the construction phase, the increased traffic could lead to increased sedimentation/pollution of watercourses. The interactions between these aspects was considered in the EIS, particularly in the design of suitable mitigation to minimise impacts.
Traffic and Transportation and Human Environment	During the construction of the proposed development, the increased traffic levels could result in impacts on local road users. In addition, the laying of MV and HV cables within the public roadway may require temporary road diversions. The interactions between these aspects was considered in the EIS, particularly in the design of suitable mitigation to minimise impacts.
Hydrology, Landscape & Visual	There is a low potential for an increased risk of flooding, from the proposed development. This could impact on the landscape in the surrounding environment. This was considered in the EIS, particularly in the design of mitigation measures to minimise any impact from flooding.
Traffic & Transportation, Flora & Fauna	During the construction phase, increased traffic could impact on flora and fauna in the surrounding environment. The interactions between these aspects was considered in the EIS, particularly in the design of mitigation measures to reduce impact.
Telecommunications & Aviation, Human Environment	There is the potential for impacts from telecommunications to impact on the human environment. These interactions were considered in the assessment.
Noise & Vibration, Archaeological, Architectural and Cultural Heritage	There is also the potential for increased noise to impact on the archaeological, architectural and cultural heritage sites in the local area, in terms of the setting and enjoyment of these sites this was considered in the EIS.

## 17.1 Conclusions on the Development Interactions and Inter-relationships and their Impacts in Context

As outlined, the development has the potential to impact on various environmental aspects, and there are interactions and inter-relationships between these aspects as described above. The EIS has considered these interactions and inter-relationships throughout the appraisal, firstly through the design of the turbine layout and cable routes to avoid impacts where possible and also in the definition of suitable mitigation measures to minimise the impacts.

In summary, based on the positive impacts of the development, and the low level of negative impacts (as mitigated, where required), it is considered that Maighne is a suitable location for a wind farm development.