



**DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE**

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED DREHID WIND FARM AND SUBSTATION, CO. KILDARE

VOLUME 2 – MAIN EIAR

CHAPTER 17 – Interactions of the Foregoing

**Prepared for:
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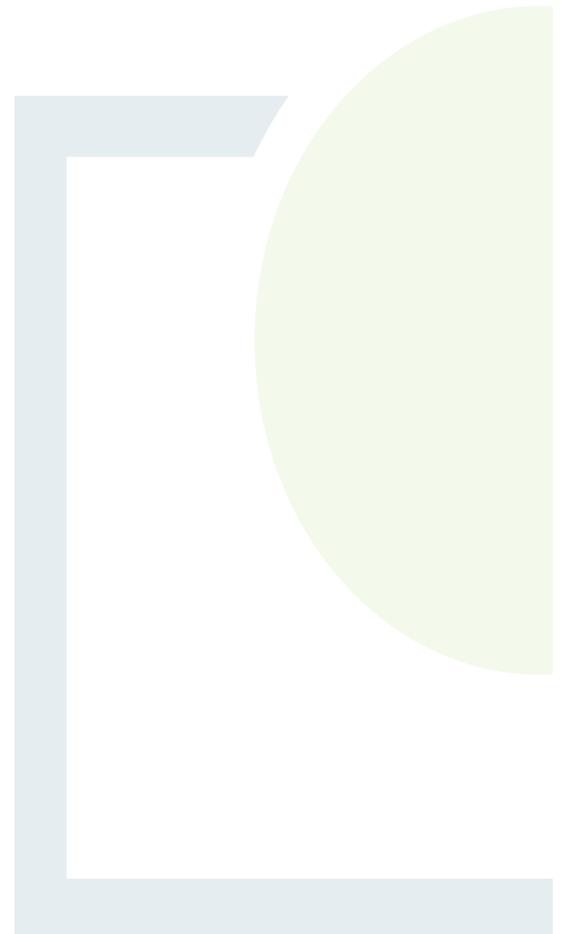


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17. INTERACTIONS OF THE FOREGOING

17.1 INTRODUCTION

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 population and human health, geology and slope stability, biodiversity, hydrology, water quality, material assets, shadow flicker and archaeological, architectural and cultural heritage.

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 17-2 also provides further detail and examples of the diverse range of interactions and inter-relationships between the key environmental aspects.

Each individual chapter of this EIAR has had regard to interactions between different impacts. For example, Biodiversity has had regard to Hydrology and Water Quality impacts and Soils and Geology has had regard to Biodiversity, Hydrology & Water Quality and Traffic & Transportation.



Table 17-1: Summary of Interactions Between Key Environmental Aspects

	Air Quality & Climate	Noise & Vibration	Biodiversity	Land, Soils & Geology	Hydrology & Water Quality	Population, Human Health & Material Assets	Shadow Flicker	Traffic & Transport	Archaeological, Architectural & Cultural Heritage	Landscape & Visual	Telecommunications & Aviation
Air Quality & Climate	Interaction	No Interaction	Interaction	Interaction	No Interaction	Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction
Noise & Vibration	No Interaction	Interaction	Interaction	No Interaction	No Interaction	Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction
Biodiversity	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction
Land, Soils & Geology	Interaction	No Interaction	Interaction	Interaction	Interaction	Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction
Hydrology & Water Quality	No Interaction	No Interaction	Interaction	Interaction	Interaction	Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction
Population, Human Health & Material Assets	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction
Shadow Flicker	No Interaction	No Interaction	No Interaction	No Interaction	No Interaction	Interaction	Interaction	No Interaction	No Interaction	No Interaction	No Interaction
Traffic & Transport	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	No Interaction	Interaction	Interaction	No Interaction	No Interaction
Archaeological, Architectural & Cultural Heritage	No Interaction	No Interaction	No Interaction	No Interaction	No Interaction	Interaction	No Interaction	Interaction	Interaction	No Interaction	No Interaction
Landscape & Visual	No Interaction	No Interaction	No Interaction	No Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction	Interaction	No Interaction
Telecommunications & Aviation	No Interaction	No Interaction	No Interaction	No Interaction	No Interaction	Interaction	No Interaction	No Interaction	No Interaction	No Interaction	Interaction

 = interaction or inter-relationship  = no interaction or inter-relationship



Table 17-2: Description of Interactions Between Key Environmental Aspects

INTERACTION	DESCRIPTION
Air Quality, Noise & Vibration, Traffic & Transportation, Population & Human Health, Biodiversity, Land, Soils & Geology	Dust and noise nuisance arising from the construction phase of the Proposed Development (earthworks etc.) in combination with increased construction related traffic could cause negative impacts to residential amenity and local fauna in close proximity to the development site. Dust, vibration and noise will occur both at the site and along haul routes associated with the Proposed Development as well as associated exhaust emissions from construction traffic. Dust emissions can also affect biodiversity by affecting photosynthesis, respiration and transpiration in plants. The combination of environmental impacts may also affect tourism, but it is likely that this impact will be imperceptible following the implementation of mitigation measures during the construction and operational phase. This interaction of effects will also occur at the decommissioning phase of the development. The impacts are considered to be temporary and measures are set out throughout the EIAR to mitigate against these effects on residential amenity and biodiversity. The indirect impacts on climate from traffic emissions was also considered during the assessment. Once operational, the wind farm will result in positive impacts due to the reduction in use of fossil fuels for energy and the lack of emissions.
Noise & Vibration, Landscape & Visuals, Shadow Flicker, Population and Human Health	It is possible that a combination of noise, shadow flicker and visual intrusion caused by the proposed wind turbines may impact on residential amenity of nearby residential receptors. Each of these potential impacts has been considered in relation to residential amenity and it is not likely that an interaction of the above would negatively impact on nearby residential receptors following adherence to relevant guidance and the implementation of mitigation measures.
Land, Soils & Geology, Hydrology & Water Quality, Population & Human Health, Biodiversity	Potential alteration to drainage patterns caused by the construction of the proposed turbines may affect peat stability and cause slope failure. This could have on-site and off-site effects and could cause potential impacts on human safety and destruction of ecological habitat. Appropriate mitigation measures have been set out to ensure drainage patterns are controlled so as to not affect slope stability. Compacting of soil caused by construction plant and machinery may impact on soil infiltration. This has potential to cause flooding and saturated ground which is a potential danger to human safety and possible destruction of ecological habitat. A Construction Environmental Management Plan has been prepared and will be adopted by the appointed contractors which will address on-site safety and the CEMP will detail the full suite of mitigation measures to be adhered to during the works.
Land, Soils & Geology, Hydrology & Water Quality, Biodiversity	During the construction phase, excavation and tree felling will expose soil. This could cause potential sedimentation of watercourses. Silt may migrate causing the sediment loading of nearby streams, impacting on water quality. This could have a negative impact on aquatic biodiversity downstream of the site.



INTERACTION	DESCRIPTION
	Mitigation measures have been proposed to assure that sedimentation of streams will not occur. On-site refuelling also has potential to harm aquatic biodiversity in the case of spillage of hydrocarbons. These have potential to migrate to nearby streams significantly impacting on water quality. Appropriate measures will be put in place to assure hydrocarbon storage and refuelling will occur within bunded areas.
Hydrology & Water Quality, Traffic & Transportation	There is potential for an increase in run-off due to haulage trucks to enter watercourses. However, following the implementation of mitigation measures and drainage design measures, this will not result in a significant effect.
Land, Soils & Geology, Population & Human Health, Traffic and Transportation	Increased traffic during the construction phase may have a negative impact on the public road. Migration of soil from the construction areas on wheels of vehicles exiting the construction site may cause the soiling of public roads. This can affect skid resistance and cause potential impacts on human safety on the public road. Appropriate wheel washing facilities will be employed on site to ensure migration of soils will not take place between the construction site and public road.
Telecommunication & Aviation, Population and Human Health	The proposed development may cause impacts on communication, navigation and surveillance for air traffic control which could affect separation and safety of aircraft which may impact on human safety, however this is unlikely to occur. The siting of the turbines has been informed by best practice and consultation and mitigation measures and further consultations prior to construction with telecommunications providers and IAA will ensure no impacts occur.
Landscape and Visual, Biodiversity, Population and Human Health	In terms of landscape and visual impacts, the loss of hedgerows and trees due to construction will have a local impact, however, mitigation planting will ameliorate this. The change in the landscape, from the erection of turbines, and the masts for the grid connection, 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 EIAR, particularly in the design of the turbine layout. Detailed zone of theoretical visibility maps (ZTVs), Route Screening Analysis and photomontages were prepared to assess the level of impact.
Archaeology, Architectural and Cultural Heritage, Traffic & Transportation	There is potential for in-combination effects from construction traffic to affect the structural elements of Johnstown Bridge (RPS B04-25). However, a baseline condition survey will be carried out prior to construction and the bridge will be monitored during the construction phase.
Archaeology, Architectural and Cultural Heritage, Population and Human Health	Impacts on the archaeological, architectural and cultural heritage of the surrounding environment, both during construction and operation, has the potential to impact on the population through the excavation of previously unknown features, or, during operation of the Proposed Development, in a change in the setting of the feature, due to changes in landscape.



INTERACTION	DESCRIPTION
	These interactions were considered in EIAR, both in the design of the turbine layout and in the design of suitable mitigation to protect the archaeological, architectural and cultural heritage during construction and operation.

17.2 CONCLUSION

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



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