



White Hill Wind Farm

# Environmental Impact Assessment Report

## Chapter 14: Interaction of the Foregoing

White Hill Wind Limited

Galetech Energy Services

Clondargan, Stradone, Co. Cavan Ireland

Telephone +353 49 555 5050

[www.galetechenergy.com](http://www.galetechenergy.com)



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## 14.1 Introduction

This chapter summarises the critical results and conclusions of each individual chapter of this EIAR and identifies interactions between issues arising under separate factors which might otherwise not be noticed but which need to be assessed to ensure all likely significant effects are identified and assessed.

The interactions between effects on different environmental factors are also addressed, as relevant, throughout this EIAR by ensuring that effects are cross-referenced between topics, thus reducing the need to duplicate coverage of such topics. Close coordination and management within the EIA project team, and careful read-across editing, ensured that assessors were vigilant for complex interactions (direct, indirect, secondary and cumulative) and, where they are likely to arise, they are adequately identified and assessed. This included interactions between effects, and possible cumulative effects, arising from the mitigation measures proposed that could magnify effects through the interaction or accumulation of effects.

Reference should also be made to **Chapter 2** which provides an evaluation of reasonable project alternatives and **Chapter 3** which provides a detailed description of the project. The design of the project is an iterative process; the final project integrates numerous 'mitigation by design' measures, and these *a priori* respond directly to many of the likely effects identified in this EIAR.

## 14.2 Interactions

It is general practice that interactions are shown by a means of a matrix, as set out in **Table 14.1** below, examining each aspect of the receiving environment which is considered in detail in the respective chapters of this EIAR, and cross-tabulated against all other aspects that have also been considered. This is accompanied by a brief text describing the interactions, including during the construction and operational phases.

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 below, including whether it is weak or strong, or whether the interaction is positive or negative. Where there is no number indicated in the matrix, it is assessed there is no likelihood for any significant effects by way of interaction between the environmental factors.

Interactions	Population and Human Health	Biodiversity	Land and Soils	Water	Air Quality & Climate	Landscape	Cultural Heritage	Noise & Vibration	Shadow Flicker	Material Assets
Population and Human Health						1		2	3	4
Biodiversity			5	6						
Land and Soils		5					7			
Water		6								
Air Quality & Climate										8
Landscape	1									
Cultural Heritage			7							9
Noise & Vibration	2									
Shadow Flicker	3									
Material Assets	4				8		9			

**Table 14.1: Matrix of Interactions**

**14.2.1 Interaction 1: Population & Human Health and Landscape**

The likely effects of the project on landscape, and the interaction with population and human health, have been discussed in **Chapter 4** and **Chapter 9** of this EIAR. The project has been assessed having regard to the sensitivity of the landscape, the degree of intrusion or dominance created by it and the degree to which is it visible in the landscape. Viewshed Reference Points (VRPs) consisting of views from key prospects and receptors were identified and a detailed analysis of each, accompanied by photomontages, is discussed in **Chapter 9**. Overall, it is concluded that the project will not give rise to any likely significant landscape or visual impacts such that could result in adverse population & human health effects.

**14.2.2 Interaction 2: Population & Human Health and Noise & Vibration**

During the construction phase, noise will be generated through a number of typical on-site construction stage activities which will be mitigated through appropriate mitigation and good construction practices. Likely effects will therefore be short-term and temporary in nature and a perceptible increase in noise, which is sufficient to cause a significant effect to local residential amenity, is not likely. No significant vibration generating activities are proposed to be undertaken.

Noise predictions, for noise likely to be generated during the operational phase, have been carried out at all 129 no. receptors within 10-times overall tip height of a proposed turbine (1,850m). The noise prediction model confirms that the project will not result in the generation of likely significant noise levels such that adverse effects on population & human health would occur (see **Chapter 11**).

#### 14.2.3 Interaction 3: Population & Human Health and Shadow Flicker

Once the project is operational, there is potential for shadow flicker to occur, depending on certain and highly infrequent conditions, as explained in detail in **Chapter 12**. All properties within 10-times overall tip height of the proposed turbines (1,850m) have been assessed for shadow flicker, with a total of 129 no. properties being identified and assessed.

Due to the committed-to implementation of turbine shutdown technology when shadow flicker could theoretically occur at a residential dwelling, it is assessed that there will be no likely significant interaction between population & human health and shadow flicker.

#### 14.2.4 Interaction 4: Population & Human Health and Materials Assets

In terms of population & human health and material assets, the only likely interaction relates to transport and access.

The project will generate construction traffic during the initial construction stage. In terms of vehicle movements, it is estimated that approximately 5,850 trips (includes both in and out) of HGVs will be required, including abnormal loads transporting turbine components. Some minor levels of disruption may occur during public road upgrade works and the delivery of wind turbine components; however, traffic management measures will be agreed with the Planning Authority and implemented in full to ensure that any likely significant impacts are avoided.

The increase in traffic volumes on the surrounding road network will be temporary in nature as the expected duration of the construction phase is 12-18 months. Once turbines are in operation, traffic movements to and from the project site will be infrequent, probably averaging 1-2 no. visits per week by a light commercial vehicle for maintenance purposes. All trips to and from the site will be undertaken in accordance with a traffic management plan, which will be prepared and agreed with the Planning Authorities. Overall, it is concluded that the project will not result in any likely significant interactions between population and human health, and transport and access.

The project will not result in any likely interactions between population and human health, and aviation. As requested by the IAA, aviation warning lights will be fitted to the proposed wind turbines (and cranes during the construction phase); the specific requirements of which will be agreed with the IAA prior to the commencement of construction.

Generating electricity from wind energy has the potential to interfere with the quality of radio waves and microwaves used for communication purposes e.g. analogue TV signals, radio signals, aircraft and navigation systems and microwave links. As discussed in **Chapter 13**, a range of bodies were consulted regarding the project. As part of the environmental scoping and constraints analysis process, a number of organisations and service providers identified a risk of interference with existing telecommunication links. Through a combination of mitigation measures and project design proposals, likely effects on telecommunication services can be avoided.

Accordingly, interactions with population & human health are not likely to be significant.

The project will not result in any likely significant interactions between population & human health and renewable & non-renewable resources.

#### 14.2.5 Interaction 5: Biodiversity and Land & Soils

As outlined in **Chapter 6**, excavated ground exposed during the construction phase may lead to the sedimentation of nearby watercourses. Mitigation measures will be implemented such that there will be no likelihood of silt laden runoff having an adverse effect on water quality and aquatic ecology in surrounding water bodies. Mitigation measures proposed during construction will also ensure that the project does not result in a likely significant effect on soils or the geological environment.

The excavation and removal of soils for the construction of permanent features will lead to habitat loss. However as discussed in **Chapter 5**, the project is generally located within areas of improved agricultural grassland and commercial forestry, which is of lower ecological importance, and is not located within an ecologically sensitive area.

Overall the conclusion of the biodiversity assessment is that the residual effects on the important ecological receptors; including designated sites, habitats, flora and fauna; are not likely to be significant. Therefore, it is concluded that the project will not result in a likely significant interaction between biodiversity and land & soils.

#### 14.2.6 Interaction 6: Biodiversity and Water

As outlined in **Chapter 7**, excavated ground exposed during the construction phase may, in the absence of mitigation, lead to the sedimentation of nearby watercourses and downstream effects on habitats and species. A suite of comprehensive mitigation measures is proposed which will be fully implemented in order to exclude the possibility for silt laden runoff to discharge to surface water features and to ensure that adverse effects on water quality and aquatic ecology do not occur.

The interaction between biodiversity and water is also closely related to the interaction between biodiversity and land and soils and this interaction should also be read in conjunction with **Interaction 5**.

In light of the assessment undertaken and the mitigation proposed, there is no likelihood of significant interactions between biodiversity and water.

#### 14.2.7 Interaction 7: Land & Soils and Cultural Heritage

The excavation of soils raises the possibility for previously unrecorded sub-surface cultural heritage features to be discovered. To limit any likely adverse effects or significant interactions, as is normal practice on construction sites, archaeological monitoring of all excavations; amongst other measures; will be undertaken under licence from the Department of Housing, Local Government and Heritage to ensure that any features uncovered are appropriately recorded and managed. Overall, therefore, it is concluded that the excavation of soils will not result in any likely significant interaction with cultural heritage.

#### 14.2.8 Interaction 8: Air Quality & Climate and Materials Assets (Transport & Access)

There will be no likely significant interaction between Material Assets (Transport & Access) and Air Quality and Climate. Exhaust emissions from construction vehicles

will, as described at **Chapter 8**, result in a temporary and imperceptible adverse effect on local air quality. As the likely traffic volumes associated with the operational phase of the project will be very low; overall, it is assessed that there will be no likely significant interaction between Air Quality, Climate and Material Assets (Transport and Access).

#### 14.2.9 Interaction 9: Cultural Heritage and Materials Assets (Transport & Access)

As discussed in **Chapter 10**, there are 2 no. recorded cultural heritage features along the turbine component haul route which will be affected by the project. However, given the characteristics of the works to be undertaken at Crettyard Bridge and Black Bridge, it is assessed that significant effects are not likely to occur.

Furthermore, all works associated with these cultural heritage features will be monitored, under licence, to ensure that all appropriate design and mitigation measures are fully implemented.

### 14.3 Summary of Interactions & Effects

All environmental factors are interrelated to some degree and the assessment of these interactions is an important requirement of the EIAR process. Having assessed the interaction of likely effects during the construction, operational and decommissioning phases; the interaction of effects is not assessed as likely to result in any effects that could magnify effects through the interaction or accumulation of effects. All interactions of effects are assessed and have been fully considered in the relevant chapters of this EIAR.

The project will result in positive effects at international, national, regional and local level particularly in relation to population, human health, air quality and climate. During the operational phase, the development will result in a long-term positive effect on both air quality and climate and, in turn, on human health. The generation of electricity from the project will lead to a net saving in terms of greenhouse gas emissions. The production of this renewable electricity from the project will result in a total GHG saving over its proposed 35-year lifetime of relative to 16% of the GHG emissions from power generation in Ireland in 2020.

Overall, it is concluded that the impact of the project on the receiving environment is not likely to be significant. Likely effects from the project vary in significance but are generally in the minor to negligible range. A number of positive impacts have also been identified such as community benefits; a reduction in the use of fossil fuels; and a significant contribution towards achieving Ireland's national and European targets for energy production from renewable sources.

The likely impacts which have been identified in this EIAR demonstrate that the project will not result in any likely significant negative impact on the environment, and will result in a positive impact through the production of energy from renewable sources at an appropriate location.

