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18.0 Interactions

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Mayo Planning Authority - Inspection Purposes Only

18.1 Introduction

This Chapter was prepared by ABO Energy Ireland Ltd. having regard to the inputs, assessments and conclusions provided by the multi-disciplinary team of competent and expert consultants outlined in the preceding chapters of this EIAR.

Those preceding chapters fully describe the existing environment at the proposed Keerglen Wind Farm and examine the various elements of the construction, operational and decommissioning phases of the project which have the potential to create environmental impacts. All reasonable impacts have been outlined and examined in the preceding Chapters 5 - 17. Where necessary, mitigation measures are proposed to avoid, prevent, reduce and where possible offset any significant impacts. It is considered residual impacts, where they arise are minor and in many cases temporary.

However, in addition to the requirement to describe the likely significant effects of the proposed development on the different elements of the environment, the interaction of those effects needs to be considered. Such interactions are identified in Table 18.1, a matrix examining each aspect of the environment. Where there is potential for an interaction, it is discussed in more detail below.

Population and Human Health / Landscape and Visual

Impacts on the landscape and visual resource during the construction and operational phases of the development have the potential to impact indirectly upon population and human health by the temporary introduction of construction machinery and the erection of wind turbines into a natural, but already modified landscape. This change in the view will have either positive or negative impacts for people dependent on their opinion regarding wind farm development. Photomontages of the relationship are provided for in Volume 5 of the EIAR and a detailed analysis is included in Chapter 10 which concludes that the proposed development will not give rise to significant landscape and visual impact.

Population and Human Health / Shadow Flicker

Impacts of shadow flicker within the operational phase of the development have the potential to impact upon population and human health if shadow flicker is caused by the wind turbines. However, shadow flicker impacts can be eliminated or reduced by equipping the wind turbines with a shadow flicker control system which stops the turbines at the appropriate times. The deployment of such a solution can bring the residual impact to a level that can be accepted and in accordance with the DWEDGs and therefore, no significant impacts are predicted as a result of the interaction and inter-relationship of shadow flicker and population and human health.

Population and Human Health / Noise

Construction noise will be temporary and short-lived and the main construction activities at a distance from residential properties to be of negligible significant effect. Noise from turbine operations has been assessed and levels at properties will comply with all appropriate guideline limits and therefore will not result in a significant effect on the receiving environment.

Population and Human Health / Air Quality

Impacts on air quality during the construction and decommissioning phases of the development have the potential to impact upon population and human health as a result of dust or pollutants generated. The levels of dust generated by construction and decommissioning is unlikely to significantly increase levels of air pollutants or cause a breach of the air quality standards or to significantly affect receptors. During the operational phase, it was identified that there was a positive effect predicted on the climate, as a result of the development. Therefore, it is assessed that there will be a positive impact from the interaction and inter-relationship between population and human health, and air quality during operation of the Development.

Population and Human Health / Climate

Impacts on climate during the construction and decommissioning phases of the development have the potential to impact upon population and human health as a result of dust or pollutants generated. During the operational phase, it was identified that there was a positive effect predicted on the climate, as a result of the development. Therefore, it is assessed that there will be a positive impact from the interaction and inter-relationship between population and human health, and climate during operation of the Development.

Population and Human Health / Hydrogeology, Hydrology and Water Quality

A potential impact arising is in relation to water supply, in particular to wells, bore holes or surface water abstractions. These could be impacted upon as a result of the proposed earthworks. Such potential impacts have been considered and addressed in Chapter 7 and accordingly there will be no impact on quality or quantity of water supply.

Population and Human Health / Traffic and Transportation

Impacts on roads and road users as a result of traffic generated by the construction and decommissioning phases of the development have the potential to affect population and human health due to delay and frustration. Chapter 14 concluded that the construction effects of increased traffic on local roads/road users, passing local receptors such as humans, residences and communities, is assessed as temporary and not significant.

Population and Human Health / Telecommunications

No impacts are predicted in relation to interference with communication links or aviation. It is very unlikely that there would be any impact on for example TV signal (given the switch over from analogue to digital signal).

Biodiversity / Hydrogeology, Hydrology and Water Quality

Construction phase works have the potential to give rise to some water pollution with drainage from the site potentially affecting aquatic ecology and other species of flora and fauna. Such potential impacts have been considered in Chapters 6 and 7 of this EIAR and mitigation measures in the form of drainage design have been outlined. Accordingly, with the implementation of the mitigation measures residual effects on water quality are judged as being unlikely to have a significant negative impact on aquatic ecology, flora and fauna.

Biodiversity / Soils and Geology

A mitigation-by-design approach was taken in relation to the design of the principal features of the development which sought to avoid areas of high sensitivity for key habitats and species. Lands within the Ummerantarry Bog NHA were removed from consideration on ecological grounds and the proposal does not involve works within any Natura 2000 site or other sensitive environmental areas such as Freshwater Pearl Mussel catchments.

Intact peatland habitats are a key conservation priority in the current instance and the proposed design was modified to omit the originally proposed Turbine 9, north of the Keerglen River, and to modify the location of the proposed Keerglen River crossing in order to avoid significant impacts on sensitive habitats and species (e.g. Otter). The formerly proposed T_09 WTG location contains poor fen and flush (a nationally important habitat) and the road and hardstand required to service the turbine would have occurred in a predominantly wet heath habitat. This habitat is of 'Annex 1' quality (EU Habitats Directive) and areas north of the Keerglen River, which have not historically been subject to turf cutting, provide good example of the habitat. Wet heath habitat in this area corresponds to the 'Annex I' habitat 'northern Atlantic wet heaths with *Erica tetralix* (4010)'. To this end, it was determined that proposed Turbine 9 and access road would be removed as it would lead to direct disturbance and removal of Annex I heathland habitat, in addition to fragmentation and potential indirect habitat degradation.

Set-back buffers were implemented in the selection of turbine locations and design of associated hardstands and roads to protect water-quality and aquatic habitats. 50m setback buffers have been implemented in relation to main watercourses and 10m set-back buffers were implemented in relation to main drains where possible.

Existing tracks will be utilised and upgraded where possible to avoid the unnecessary loss of habitat. Approximately 3.5km of existing agricultural tracks will be upgraded to accommodate the proposed development site internal access.

There is a high likelihood of erosion of peat and spoil during its excavation and during landscaping works.

Peat removed from turbine locations and access roads will be used for landscaping, spread within the proposed peat placement areas around certain turbines and used to reinstate the proposed borrow pit. The acrotelm will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the stored peat within the borrow pit. Reseeding and spreading/planting of heather and moss cuttings will also be carried out in these areas. These measures will prevent erosion of stored peat in the long term. A full Peat and Spoil Management Plan for the proposed development is included as Appendix 8.2 of this EIAR.

Any excess temporary mounded peat in storage for long periods will be sealed using the back of an excavator bucket. This will minimise erosion of soil. Silt fences will be installed around stockpiles to limit movement of entrained sediment in surface water runoff. The use of bunds around earthworks and mounds will prevent egress of water from the works.

To mitigate against erosion of the exposed soil or rock, all excavations will be constructed and backfilled as quickly as possible, although this will depend on the nature of the excavation – a hardstand excavation can be backfilled immediately, however a turbine base excavation will remain open for a prolonged period of time as the base is constructed. Excavations will stop during or prior to heavy rainfall events. To mitigate against possible contamination of the exposed soils and bedrock, refuelling of machinery and plant will only occur at designated refuelling areas.

Soils and Geology / Archaeology, Architectural and Cultural Heritage

There is potential for archaeological finds during construction. Accordingly, archaeological monitoring of groundwork is proposed to ensure that any such finds are fully addressed and recorded.

Landscape & Visual / Archaeology, Architectural and Cultural Heritage

The visualisation of the proposed turbines within the landscape could have an effect on the setting of archaeological and heritage assets. This impact has been described in detail in Chapter 13. However, it is concluded in Chapter 13 that there will be no likely residual effect on the cultural heritage resource.

Landscape & Visual / Hydrogeology, Hydrology and Water Quality

The removal of earth and spoil and the subsequent replacement with crushed stone for the construction

of new site tracks and hardstanding areas has the potential to alter the local landscape. The visual effect of this change is expected to be long term, localised in nature and slight.

Traffic and Transportation / Air Quality

During the construction and decommissioning phases, the use of construction vehicles primarily may give rise to dust nuisance effects, but these will be mitigated through the measures identified in Chapter 16 of the EIAR.

Traffic and Transportation / Climate

During the construction and decommissioning phases, the use of construction vehicles primarily may give rise to increased CO² emissions, but these will be mitigated through the measures identified in Chapter 17 of the EIAR.

Traffic and Transportation / Noise

There will be increased traffic noise from vehicle movements during times of peak construction activity. This is addressed in Chapters 12 and 14 and assessed to be temporary and short-lived.

18.1 Summary of Interactions

There is potential for interactions between one aspect of the environment and another. The following, Table 18.1, provides a summary of potential interactions of the various topics of the EIAR. They have been described in terms of occurring during construction: C, operation: O, decommissioning: D or a combination of all: COD.

Table 18.1 Summary of Potential Interactions

	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
	Ornithology	Biodiversity	Hydrogeology, Hydrology and Water Quality	Soils and Geology	Material Assets – Telecommunications	Landscape and Visual	Shadow Flicker	Noise	Archaeology, Architectural and Cultural Heritage	Traffic and Transportation	Population and Human Health	Air Quality	Climate
5.0 Ornithology			CO										
6.0 Biodiversity			CO										
7.0 Hydrogeology, Hydrology and Water Quality		CO				CO					CO		
8.0 Soils and Geology		COD							C				
9.0 Material Assets – Telecommunications											O		
10.0 Landscape and Visual			C						O		CO		
11.0 Shadow Flicker											O		
12.0 Noise										COD	COD		
13.0 Archaeology, Architectural and Cultural Heritage			C			O							
14.0 Traffic and Transportation								COD			COD	CD	CD
15.0 Population and Human Health			CO		O	CO	O	COD		COD		COD	COD
16.0 Air Quality										COD	COD		
17.0 Climate										COD	COD		

Construction: C, Operation: O, Decommissioning: D or a combination of all: COD

18.2 Conclusions

In terms of indirect and interaction of impacts, no unacceptable environmental impacts are envisaged as a result of the construction, operation or decommissioning of the proposed Keerglen Wind Farm when mitigation measures are implemented.