

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COOM GREEN ENERGY PARK, COUNTY CORK

VOLUME 2 – MAIN EIAR – Chapter 17 – INTERACTIONS OF THE FOREGOING

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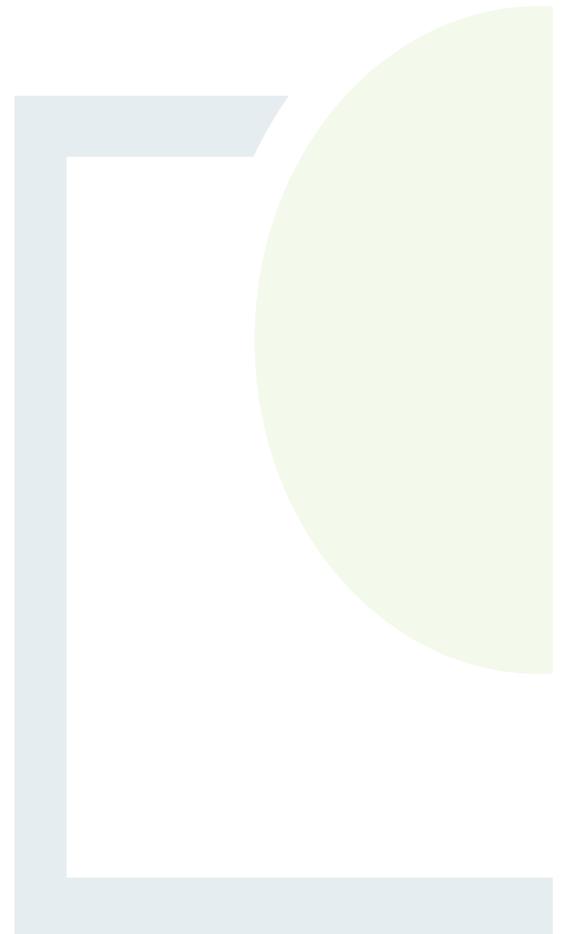


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17. INTERACTION OF THE FOREGOING

17.1 Introduction

The requirement for the identification of interactions between the various aspects of the environment as detailed throughout the EIAR is set out in Article 3(1) of the amended EIA Directive 2011/92/EU as amended by the Directive 2014/52/EU, which states the following:

The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

- a) population and human health;
- b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- c) land, soil, water, air and climate;
- d) material assets, cultural heritage and the landscape;
- e) **the interaction between the factors referred to in points (a) to (d).**

In the preparation of this chapter, regard was had to the Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact interactions (European Commission, 1999)¹, the EPA's Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. (2017)² and the European Commission's Guidance on the Preparation of the Environmental Impact Assessment Report (2017)³

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. The chapter considers potential significant environmental effects that may occur in terms of Air Quality & Climate, Noise & Vibration, Biodiversity, Land, Soils & Geology, Hydrology & Water Quality, Population & Human Health, Material Assets, Shadow Flicker, Traffic & Transportation, Archaeology, Architectural & Cultural heritage, Landscape & Visuals and Telecommunications & Aviation, as a result of the proposed project as described in Chapter 3 of this EIAR.

Direct, indirect, cumulative, and interactive impacts were considered during the siting of the proposed turbines and associated infrastructure in order to minimise impacts on the environmental aspects mentioned above.

Interactions and inter-relationships of the potential impacts as set out throughout this EIAR are detailed 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 project.

Table 17.2 provides further detail and examples of the diverse range of interactions and inter-relationships between the key environmental aspects.

¹ European Commission (1999), Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. Office for Official Publications of the European Communities, May 1999

² Environmental Protection Agency (2017), Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. EPA

³ European Commission (2017), Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report. Publications Office of the European Union



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



Table 17-1: Matrix of Interaction 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											
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											



= interaction or inter-relationship



= no interaction or inter-relationship



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

INTERACTION	DESCRIPTION
Air & Climate, Land, Soil & Geology, Noise & Vibration, Traffic & Transportation, Human Health	Potential dust nuisance from construction works and construction machinery along with the increased numbers of construction related traffic will impact on air quality and cause increased noise levels in and around the CGEP construction site, the associated grid connection works area and TDR area during the construction phase of the project. This combination of potential effects may have a moderate, temporary negative impact on residential amenity and human health for those living in close proximity to the project. Mitigation measures have been set out in Chapter 6: Air 7 Climate, Chapter 7: Noise & Vibration, Chapter 9: Land Soils & Geology and Chapter 13: Traffic 7 Transportation. These mitigation measures will reduce the potential impacts caused by construction activities on nearby receptors.
Noise & Vibration, Shadow Flicker, Landscape & Visuals, Population & Human Health	During the operational phase there is potential for a combination of noise, shadow flicker and visual effects to impact on residential amenity in the area in proximity to the proposed CGEP. Mitigation has been set out in each respective chapter including commitment to zero shadow flicker and commitment to comply with noise limits as set out in the relevant guidelines. Mitigation by design has introduced a setback distance of 750m from turbine locations to dwelling structures in order to maintain residential amenity. As result of this interaction, the operational phase of proposed project will have a slight to moderate impact on residential amenity for dwellings closest to the CGEP. As set out in Chapter 11: Population, Human Health & Material Assets, a peer-reviewed literature review did not find any credible scientific sources that link wind turbines to adverse health effects.
Land, Soil & Geology, Hydrology & Water Quality, Biodiversity	Potential sedimentation and nutrient concentration of surface water runoff as a result of construction activities and earthworks at the CGEP, grid route and TDR may impact on water quality of streams, which may negatively impact on aquatic biodiversity downstream. This combination of effects could have a significant negative impact on water quality and biodiversity. However, mitigation measures have been set out in Chapter 8: Biodiversity, Chapter 9: Land, Soils & Geology and Chapter 10: Hydrology & Water Quality, in order to reduce potential impact on watercourses and biodiversity. Following implementation of these mitigation measures, the potential impact of this interaction will be imperceptible.
Land, Soil & Geology, Hydrology & Water Quality, Biodiversity	Due to storage of hydrocarbons and refuelling on site there is potential for spills or leaks. This can impact on soil quality causing contamination and could also impact on surface and ground water. This could have further impact on aquatic biodiversity downstream. Mitigation measures have been set out in Chapter 8: Biodiversity, Chapter 9: Land, Soils & Geology and Chapter 10: Hydrology & Water Quality, in order to reduce potential impact on soils, water quality and biodiversity. These mitigation measures include the bunding of hydrocarbon storage areas and refueling of machinery and plant to occur only at designated refueling areas. Following implementation of these mitigation measures, the potential impact of this interaction will be imperceptible.



INTERACTION	DESCRIPTION
Land, Soil & Geology, Hydrology & Water Quality, Biodiversity	Horizontal directional drilling (HDD) is proposed to install sections of the grid route of the proposed project. This has potential to impact on water quality through hydrocarbon leaks, migration of excavated material or overburden collapse during the advancement of the HDD bore. This has potential to impact on aquatic ecology and water quality. Mitigation has been set out in Chapter 9: Land, Soils & Geology to avoid migration of excavated materials and protect against hydrocarbon leaks and spills. A detailed methodology for HDD is set out in the accompanying construction environmental management plan (CEMP). Following implementation of mitigation measures and use of best practice construction methods, the potential impact of this interaction will be imperceptible.
Land, Soil & Geology, Hydrology & Water Quality, Human Health	The activities associated with the construction and decommissioning of the proposed project have potential to result in soil compaction due to heavy machinery or storage of heavy goods on the construction site. This has potential to increase surface water runoff due to the reduction in infiltration of rainfall. This can also occur with the silting of drains causing blockages. This may cause excessive standing water which poses a threat to human health and safety of construction workers with potential for flooding and risk of drowning. Mitigation measures are set out in Chapter 9: Land, Soils & Geology which includes the restricting machinery and vehicles to access tracks and hardstandings where possible and the marking of work corridors for machinery. Best practice construction methods are set out in the CEMP and drainage design has been established to avoid such occurrences. Following implementation of mitigation measures and use of best practice construction methods, the potential impact of this interaction will be imperceptible.
Land, Soil & Geology, Traffic & Transportation, Human Health	Exposed soil due to construction works and excavation at the CGEP and grid route area has potential to migrate to the public road on the wheels of construction related traffic. This potential impact can cause soiling of roads and can reduce skid resistance causing a potential safety risk to motorists on public roads. Mitigation measures are set out in Chapter 9: Land, Soils & Geology to avoid migration of excavated soil. All excavations will be constructed and backfilled as quickly as possible. Excavations will stop during or prior to predicted heavy rainfall events. Following the implementation of mitigation measures, the potential impact of this interaction will be imperceptible.
Land, Soil & Geology, Traffic & Transportation, Hydrology & Water Quality, Biodiversity	Exposed soil due to construction works and excavation at the CGEP and grid route area has potential to migrate to the public road on the wheels of construction related traffic. This can impact on water quality due to silt laden run-off migrating to roadside drains. This has potential to impact on aquatic biodiversity including protected habitats. Mitigation measures are set out in Chapter 9: Land Soil & Geology to avoid migration of excavated soil. Following the implementation of mitigation measures, the potential impact of this interaction will be imperceptible.
Land, Soil & Geology, Hydrology & Water Quality, Human Health, Biodiversity, Material Assets	The potential susceptibility of the project to major accidents and natural disasters is considered in Chapter 11: Population, human Health & Material Assets. This assessments considers the potential impact of landslides/slope failure, forest fire and flooding.



INTERACTION	DESCRIPTION
	<p>These events have potential to impact on soils and geology, hydrological regimes, water quality, biodiversity, human health and safety of construction workers, forestry workers and the general public, material assets including property, roads and infrastructure and natural resources. Slope stability has been considered in Chapter 9: Land, Soils and Geology. Mitigation measures have been set out and impacts associated with slope stability will be imperceptible. Flood risk was considered in Chapter 10: Hydrology & Water Quality and had regard to the potential impact flooding might have on slope stability. The flood risk assessment concluded that the proposed development will not result in a significant alteration to the existing hydrological regime and will not result in significant increase in run-off. This was also assessed with a 10% increase predicted run-off flow to account for potential future climate change. Safety measures have been built into the design of the proposed development to avoid potential for fire and avoid potential for the spreading of fire as set put in Chapter 11: Population, Human Health & material Assets. Following implementation of mitigation measures, the potential impact of these interactions is considered negligible.</p>
<p>Land, Soil & Geology, Material Assets, Traffic and Transport</p>	<p>If imported materials or site won materials are found to be unsuitable for use during construction, the material will be disposed of at a licenced facility as detailed in Chapter 3: Description of the proposed Development. This has potential to cause negative impacts on the local road network due to the required extra journeys transporting the material. This also has potential to impact on material assets in that extra materials will be required to replace unsuitable materials. This potential impact can also affect the capacity of licenced disposal facilities. Appropriate suitability tests will be conducted on all imported materiel and site won materiel prior to transport and excavation. As a result, the potential impact from this interaction will be imperceptible</p>
<p>Hydrology & Water Quality Biodiversity</p>	<p>During the construction and decommissioning phases of the proposed project, sanitary waste and material waste accumulated at the construction site has potential to impact on water quality and biodiversity if mishandled or disposed of inappropriately. As set out in the Construction Environmental Management Plan (CEMP) included in Appendix 3.1, all on-site waste will be stored appropriately and disposed of at a licenced waste facility as further detailed in Chapter 3: Description of the Proposed Development. As a result, the potential impact of this interaction will be imperceptible.</p>
<p>Archaeology, Architectural & Cultural Heritage, Landscape and Visual, Recreation, Amenity and Tourism</p>	<p>There is potential for the operational phase of the CGEP to negatively impact on significant archaeological sites in proximity to the proposed development. The presence of turbines may negatively affect the quality and amenity of such sites due to visual prominence. This may impact on tourism related to cultural heritage. Mitigation by design has avoided impact on sensitive archaeological and culturally heritage sites in proximity to the proposed CGEP. Furthermore, an assessment of significant sites is included in Chapter 14: Archaeology, Architectural and Cultural Heritage. No significant impact was identified. The landscape and visual impact assessment included in Chapter 15: Landscape & Visuals has considered the potential visual impact on heritage and amenity features.</p>



INTERACTION	DESCRIPTION
	<p>The assessment concludes that the operational phase of the CGEP will have a moderate-slight to slight-imperceptible visual impact on significant heritage and amenity features. The potential impact of this interaction is considered to range from moderate to imperceptible.</p>
<p>Biodiversity, Material Assets, Land Use</p>	<p>The construction of the CGEP will result in a change of land use from forestry to renewable energy development over a small proportion of the overall site area. This will involve the felling of approximately 62.8 hectares of forestry resulting in a loss of renewable resources (material assets) and a loss of habitat. As set out in Chapter 8: Biodiversity the habitat loss is not considered significant. Furthermore, replant lands have been proposed to replace the loss of material assets. These lands will also provide a similar habitat to the area of forestry removed as part of the construction of the CGEP. The interaction of these impacts is considered to be slight and will be mostly reversible following decommissioning.</p>
<p>Land, Soil & Geology, Noise & Vibration, Biodiversity Hydrology & Water Quality</p>	<p>During the construction phase there is potential for impact to biodiversity from including bird species during felling, vegetation clearance and movement of soil and operating machinery. These activities will generate noise with potential to displace species and impact on foraging and nesting habitats at the CGEP, TDR area and grid route area. Secondary habitat degradation may occur through a deterioration in water quality as a result of earthworks. Risk of disturbance to sensitive species is considered to be of low and of medium significance. Taking into account the magnitude of habitat loss, and the extent of available habitat in the surrounding area and wider landscape, the impact significance during the construction period is evaluated as not significant as outlined in Chapter 8: Biodiversity. Mitigation measures have been set out in Chapter 9: Land, Soils & Geology and Chapter 10: Hydrology & Water Quality in order to avoid impact on water quality and aquatic species and habitat. Mitigation measures have been set out in Chapter 8: Biodiversity to avoid impact on species and habitats including avifauna and mammals during construction. Measures include all felling and clearing of vegetation will be carried out outside of the nesting season for birds. Pre-construction monitoring surveys will be undertaken and an Ecological Clerk of Works will be present to oversee the construction works. Mitigation measures have been set out in Chapter 7: Noise & Vibration to reduce noise where possible during the construction phase of the project. Following implementation of mitigation measures, the potential impact to species and habitat as a result of this potential interaction is not considered significant and will be imperceptible for much of the project.</p>
<p>Land, Soil & Geology, Traffic and Transportation, Biodiversity</p>	<p>There is potential for the spread of invasive plant species as a result of the construction activities. This may occur due to excavation, backfilling, removal or transport of soils containing invasive species. Mitigation has been set out in Chapter 8: Biodiversity and included in the construction management plan to avoid the spread of invasive species and to dispose of them where necessary. Wheel washes draining to silt traps will be implemented at site entrances to prevent the possible spread of any invasive species. Following implementation of these mitigation measures, the potential impact of this interaction will be imperceptible.</p>



INTERACTION	DESCRIPTION
Air & Climate, Material Assets	The operational phase of the proposed project will contribute to the displacement of use of fossil fuels required in electricity generation by producing renewable electricity from natural resources. This will provide greater energy security to the national grid, reducing the nation’s dependency on fossil fuels and reducing the costs associated with fossil fuel imports. This will have a positive impact on material assets and a positive impact on air quality, displacing up to 216,938 tonnes of CO2 emissions per annum which would otherwise be released to the atmosphere as a result of the burning of fossil fuels. This interaction will benefit in reducing climate change.

17.2 Conclusion

As outlined, the CGEP project has potential to impact on various environmental aspects as detailed throughout this EIAR. As outlined in this Chapter, there are interactions and inter-relationships between these aspects as described above. The EIAR has considered these interactions and inter-relationships throughout the assessment, firstly through the design wind farm site, grid route and turbine delivery route, to avoid impacts where possible and also in the definition of suitable mitigation measures to minimise potential impacts. It is therefore considered that the significant impacts associated with the interactions of environmental effects outlined in this chapter will be avoided due to the implementation of mitigation measures as detailed throughout the EIAR.



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