

18.0 INTERACTIONS OF THE FOREGOING

18.1 INTRODUCTION

The potential effects of the proposed power plant and the measures proposed to mitigate these effects have been outlined in this EIAR. However, in any development with the potential for environmental effect there is also the potential for interaction between effects of the different environmental aspects.

The result of these interactions may either exacerbate the magnitude of the effect or may in fact ameliorate it. As part of the requirements of an EIAR, the interaction of the effects on the surrounding environment needs to be addressed.

Table 18-1 outlines the different environmental aspects which have potential to interact as a result of the proposed power plant. Interactions have been clearly identified in the early stages of the project and where the potential exists for interaction between environmental impacts, the EIAR specialists have taken the interactions into account when making their assessment. Potential interactions (both positive and negative) have been considered for the construction, operation and decommissioning phases of each of the different environmental aspects.



Table 18-1: Interaction between Environmental Topic (positive and negative)

Interaction Matrix		Population and Human Health	Land, Soils and Geology	Hydrology and Hydrogeology	Air Quality and Climate	Noise	Biodiversity	Cultural Heritage	Landscape / Townscape and Visual	Traffic and Transport	Material Assets	Major Accidents and Disasters
	Corresponding Topic Heading											
	Interaction											
	No Interaction											
Population and Human Health												
Land, Soils and Geology												
Hydrology and Hydrogeology												
Air Quality and Climate												
Noise												
Biodiversity												
Cultural Heritage												
Landscape / Townscape and Visual												
Traffic and Transportation												
Material Assets												
Major Accidents and Disasters												



18.2 DISCUSSION OF INTERACTIONS

In addition to Table 18-1, the following section summarises the primary interrelationships of aspects of the environment with the potential for significant effects as a result of the proposed power plant.

18.2.1 POPULATION AND HUMAN HEALTH

Interactions with Land, Soils and Geology and Hydrology and Hydrogeology

During the construction phase of the development, there is potential for short-term interaction between Population and Human Health and Land, Soils and Geology and Hydrology and Hydrogeology.

This interaction is primarily associated with the disturbance of ground within the proposed power plant site as a result of excavation works which may have potential for a negative effect on the Baldonnel Stream as a result of the erosion of soil and the inappropriate storage of excavated materials. There is also the potential for release of hydrocarbons, concrete and other pollutants which have the potential to result in pollution to soil, groundwater and surface waters. These potential impacts, along with detailed mitigation measures, are discussed in detailed in Chapter 8 and Chapter 9. With mitigation, these works will have no significant impacts on Population and Human Health.

During operation, the potential for interaction with Land, Soils and Geology and Hydrology and Hydrogeology is reduced. Any potential interactions are mitigated as set out in the respective chapters. A positive interaction is noted given that the operation of the power plant will regularise energy provision in the electricity grid especially in the context of an increase in use of renewable energy technologies, such as solar and wind power. This will accommodate and support Irelands transition to a low-carbon economy and mean that Ireland can continue to invest in renewable sources of power in order to meet future national and EU targets.

The decommissioning phase of the proposed power plant will result in generally similar impacts as the construction phase, albeit to a significantly smaller extent as much of the infrastructure will remain in-situ.

Interactions with Air Quality and Climate

During construction there is potential for air quality impacts from construction dust emissions as a result of excavation works, infilling and landscaping activities and storage of soil in stockpiles. This leads to the potential for nuisance dust. While construction dust tends to be deposited within 350 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2014). The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy will be developed as set out in Chapter 10 Air Quality and Climate.

The potential impact to air quality during the operational phase of the proposed power plant is a breach of the ambient air quality standards as a result of air emissions from the power plant engines. However, as outlined in Chapter 10, an iterative stack height determination was undertaken as part of the air dispersion modelling study to ensure that an adequate release height was selected for all emission points to aid dispersion of the plume and ensure compliance



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with the ambient air quality limit values beyond the site boundary. It has been demonstrated in the assessment undertaken that air emissions from the proposed power plant will not have a significant impact on the local environment.

The decommissioning phase of the proposed power plant will result in generally similar impacts as the construction phase, albeit to a significantly smaller extent as much of the infrastructure will remain in-situ.

Interactions with Noise

Some 16 no. noise assessment locations have been identified that are representative of the nearest residential, commercial and amenity locations. The nearest occupied noise sensitive locations (NSL) are located some 400 m to the south of the proposed power plant (i.e. R001) and some 450 m to the north east (i.e. R014). The closest amenity to the development is Grangecastle Golf Course (i.e. R015) which is located to the east of the proposed plant.

The assessment of construction noise and vibration and has been conducted in accordance best practice guidance contained in *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise* and *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration*. Subject to good working practice as recommended in Chapter 11 Noise and Vibration, noise associated with the construction phase is not expected to exceed the recommended limit values. The associated noise and vibration are not expected to cause any significant effects.

During the operational phase, information on the site layout, plant noise emission levels, noise levels have been modelled to predict noise impacts at NSLs. The predicted operational noise levels will be within best practice noise limits. Therefore, it is not considered that a significant effect is associated with the proposed power plant. Similarly, no significant vibration effects are associated with the operation of the site.

The decommissioning phase of the proposed power plant will result in generally similar impacts as the construction phase, albeit to a significantly smaller extent as much of the infrastructure will remain in-situ.

Interactions with Biodiversity

With the implementation of the CEMP during construction and the IE licence during operations, proposed power plant will not result in likely significant effects on any of the key ecological receptors at any geographic scale, with the exception of permanent loss of wet grassland habitat within the proposed development site.

Interactions with Cultural Heritage

All topsoil/overburden stripping associated with the proposed power plant will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH).



Interactions with Landscape / Townscape & Visual Impacts

The landscape / townscape sensitivity of Profile Park is considered Low. In addition to this, and in consideration of the scale of the power plant and its tallest components reaching over 30m height for one proposed structure - and that all the visual receptors were located within 1km of the site, the proposed power plant is likely to have a particularly modest impact upon visual amenity within the study area.

Interactions with Traffic and Transport

Public perception of the construction phase will be influenced primarily from the impact of traffic movement. When taken in context with the existing traffic flows in the area, the construction of the proposed power plant will result in varying (both temporarily and in relation to each road) impacts on the surrounding road network as discussed in detail in Chapter 15 Traffic and Transportation. Any increase will be short-term in nature (expected duration of construction phase is approximately 20 months) and once the power plant is operational, traffic movements to and from the site will be imperceptible given the small operational workforce.

Interactions with Materials Assets

There are no existing material assets on the site of the proposed power plant. There are material assets along the proposed routes associated with the electrical grid and gas connection. However, these assets which relate to public utilities primarily are development in built up 'made' land. Aviation impacts on Casement Aerodrome have also been assessed and not considered to be significant in relation to impacts on military operations. There will not be a significant interaction therefore between Population and Human Health with Material Assets during the construction, operational or decommissioning phases of development.

18.2.2 LAND, SOILS AND GEOLOGY

Interaction with Hydrology and Hydrogeology; and Biodiversity

During construction, this interaction is primarily associated with the disturbance of ground within the proposed power plant site as a result of excavation works which may have potential for a negative effect on the Baldonnell Stream as a result of the erosion of soil and the inappropriate storage of excavated materials. There is also the potential for release of hydrocarbons, concrete and other pollutants which have the potential to result in pollution to soil, groundwater and surface waters.

During operation no new impacts will arise. Some construction traffic may be necessary for maintenance of the site (power plant and tank farms) which could result in minor accidental leaks or spills of fuels/ oils affecting the groundwater and potential surface waters also. There will also be potential for spills and leaks of oils from the power plant infrastructure (i.e. low sulphur diesel oil will be stored as a backup fuel) and equipment resulting in contamination of soils and water.

The decommissioning phase of the proposed power plant will result in generally similar impacts as the construction phase, albeit to a significantly smaller extent as much of the infrastructure will remain in-situ.



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Mitigation measures/standard design measures and management controls as set out in Chapter 8 Land, Soils and Geology will negate any potential impacts.

Interaction with Cultural Heritage

Whilst the site of the proposed power plant has been subject to disturbances, it is unclear how this disturbance may have affected the potential archaeological resource. It remains possible that ground disturbances during construction associated with the proposed power plant may have a direct negative impact on archaeological remains that may survive within the site. In order to mitigate this, all topsoil/overburden stripping associated with the proposed power plant will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage (DoH/LGH). No significant operational or decommissioning phase interactions are predicted.

Interaction with Traffic and Transportation

During construction, preliminary volume calculations provide an approximate estimation of stone fill required for all of the hardstanding foundations of 8,500m³. Overall, the construction of the hardstanding areas for site infrastructure. When taken in context with the existing traffic flows in the area, this traffic will be short-term in nature with no significant impact predicted. No significant operational or decommissioning phase interactions are predicted.

Interaction with Material Assets

During construction, the proposed electrical grid and pipeline connections will be installed within both public and private roads. The trench will be opened using an excavator to accommodate the formation. The excavated material will be cast to the side to be reused as backfilling material where appropriate. This material will not be stored in the vicinity of any watercourse and will be smoothed with the back of an excavator bucket to minimise runoff. It will be cast on the upgradient side of the trench, so if any runoff did occur it will run into the downgradient trench. Mitigation measures/standard design measures and management controls as set out in Chapter 8 Land, Soils and Geology will negate any potential impacts. No significant operational or decommissioning phase interactions are predicted.

18.2.3 HYDROLOGY AND HYDROGEOLOGY

Interaction with Biodiversity

At a local scale, the Bal Donnell Stream flows through the site from in a north-south direction. The Baldonnell stream continues to flow northwards, discharging into the Griffeen River which then discharges into the River Liffey at Lucan. Minor surface water ponding occurs on the site.

In order to mitigate potential effects during the construction phase, best practice construction methods will be implemented in order to prevent water (surface and groundwater) pollution. A drainage system has been designed for the site including a number of features such as check dams and settlement ponds. These are designed to maintain discharge rates at existing levels and remove any sedimentation arising from excavation works. A Construction and Environmental Management Plan (CEMP) was developed for the project to ensure adequate



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protection of the water environment. All personnel working on the project will be responsible for the environmental control of their work and will perform their duties in accordance with the requirements and procedures of the CEMP. Operational maintenance works include regular scheduled maintenance works, regular inspections of all project elements with any unscheduled repairs or maintenance arising to be undertaken.

18.2.4 NOISE AND VIBRATION

Interaction with Biodiversity

Construction related noise and the physical presence of machinery and construction personnel could result in the disturbance of breeding birds (lapwing or snipe) from habitats located in close proximity to the proposed power plant. In the event that any nests are identified within the ZOI during the nest survey appropriate mitigation measures in consultation with Bird Watch Ireland will be implemented. Hoarding will be erected between the nest and the proposed development site to limit both noise and visual disturbance. During the operational phase, disturbance during the operational phase will be limited and will not result in significant effects on the receiving environment. The decommissioning phase of the proposed power plant will result in generally similar impacts as the construction phase, albeit to a significantly smaller extent as much of the infrastructure will remain in-situ. No vibration interfaces are predicted at any stage of the project.

18.2.5 MAJOR ACCIDENTS

Interaction with Multiple Topics

In respect of adverse climatic events, it should be noted that the proposed power plant will be constructed, operated and decommissioned in accordance with all relevant planning, building and environmental licencing codes. The plant is not considered to be at risk during storms or during extreme heat or cold event, any more so than other significant buildings or structures. The potential significant environmental effects relating to major accidents are set out in detail in Chapter 17 Major Accidents and Disasters. Substantial mitigation and monitoring measures are proposed to ensure the potential for these effects to occur is not realised. No significant impacts are predicted during the construction, operation or decommissioning phases of the proposed power plant.

18.3 CONCLUSION

All environmental factors are interrelated to some extent. However, the most common interactions are between Population and Human Health and visual perception, noise, air quality and biodiversity. Having studied the interaction of potential impacts during the construction, operational and decommissioning phases it has been determined that no amplification effect is anticipated. The proposed power plant will have some positive impacts on an international, national, regional and local level, particularly in terms of helping to achieve renewable energy targets. It is important to note that many of the physical, environmental and landscape and visual impacts are reversible upon decommissioning of the power plant.



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