

ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE EXPANSION OF A MATERIALS RECOVERY FACILITY AT CAPPOGUE AND DUNSINK, BALLYCOOLIN ROAD, DUBLIN 11.

Volume 2 – Main Body of the EIAR Chapter 16 – Inter-relationships and Interactions

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16. INTER-RELATIONSHIPS AND INTERACTIONS

16.1 Introduction

This chapter has been developed to identify potential inter-relationships and interactions between environmental aspects addressed in this EIAR (i.e., interactions between one environmental aspect and another environmental aspect which can result in an environmental impact).

The previous chapters have described the potential impact of the proposed development under a variety of different environmental topic headings. An assessment of impact inter-relationships and interactions is already embedded in these chapters. The purpose of this chapter is to take a more holistic and comprehensive view of the inter-relations and interactions between different aspects of the project and topics discussed in other chapters. This ensures that there is adequate coverage in this EIAR of the potential for the development to cause overall effects and cumulative impacts. This process examines whether interactions between the different effects themselves may cause impacts that are greater than those discussed individually. As such, this chapter responds to the requirement of the legislation governing the EIA process for the inter-relationship or interaction between the various environmental aspects and impacts to be fully considered, described and assessed.

This chapter considers the identified potential impact interactions between the following environmental aspects/EIAR topic chapters:

- Chapter 7 - Population and Human Health
- Chapter 8 - Biodiversity
- Chapter 9 - Soils, Geology and Hydrogeology
- Chapter 10 - Surface Water and Hydrology
- Chapter 11 - Air Quality and Climate
- Chapter 12 - Noise and Vibration
- Chapter 13 Traffic and Transportation
- Chapter 14 - Archaeological, Architectural and Cultural Heritage
- Chapter 15 - Landscape and Visual Impacts

A description of potential impacts associated with the construction, operation, and decommissioning phases of the proposed development, in the absence of mitigation, is provided in the EIAR Topic Chapters listed above.

A description of Residual Impacts associated with the construction, operation, and decommissioning phases of the proposed development, with the adoption of mitigation considered, is also provided in the EIAR Topic chapters listed above.

For a project of this nature, there is also the potential for interaction amongst these impacts that may not be perceived when examined individually. Therefore, it is necessary to consider the relationships between the impacts. The result of interactive impacts may either exacerbate the magnitude or ameliorate the extent of impact.

Several impact interactions and inter-relationships have been identified and are discussed in this chapter.



16.2 Evaluation of Impact Inter-relationships and Interactions

Table 16.1 provides a matrix indicating the key interactions and inter-relationships between the environmental aspects discussed previously in this EIAR.

Table 16.2 presents, describes, and assesses the impact inter-relationships and interactions associated with the proposed development. Where appropriate, other preceding chapters are cross-referenced.



Table 16-1: Summary of Interactions and Inter-relationships between the Key Environmental Aspects of the proposed development

	Population and Human Health	Biodiversity	Soils, Geology and Hydrogeology	Hydrology and Surface Water	Air Quality and Climate	Noise and Vibration	Traffic and Transport	Cultural Heritage	Landscape and Visual
Population and Human Health									
Biodiversity									
Soils, Geology and Hydrogeology									
Hydrology and Surface Water									
Air Quality and Climate									
Noise and Vibration									
Traffic and Transport									
Cultural Heritage									
Landscape and Visual									

Note: Green highlighting indicates a potential interrelation / interaction



Table 16-2: Description of Interaction Between Environmental Aspects

Interaction	Description
Population and Human Health and Biodiversity	<p>The proposed development has the potential to negatively impact biodiversity elements (i.e., eco-systems, habitats and species).</p> <p>Such impacts may negatively affect ecological value in the local area which in turn may affect recreational value attained by humans experiencing nature (e.g., anglers using the River Tolka).</p> <p>Comprehensive mitigation measures to prevent the occurrence of negative impacts on biodiversity because of the proposed development have been defined in Chapter 8 - Biodiversity, of Volume 2 of this EIAR. Consequently, there will be no significant residual negative impact on biodiversity elements associated with the proposed development. In turn, there will be no significant impact on the recreation and amenity value gained by humans experiencing nature in the local area because of the proposed development.</p>
Population and Human Health & Soils, Geology and Hydrogeology	<p>Potential, accidental, aqueous emissions from the proposed development (e.g., 'dirty' water discharges, release of fuels or oils) may negatively impact receiving ground and groundwater.</p> <p>This may affect the quality status of affected ground and groundwater which in turn can affect the health of humans who source their drinking water from the potentially affected groundwaters.</p> <p>The Soils, Geology and Hydrogeology chapter of this EIAR (Chapter 9 of Volume 2 of this EIAR) has defined construction phase and operational mitigation measures to prevent the discharge of polluting material to ground/groundwater (E.g., spill prevention and containment measures, triennial integrity testing of 'dirty' water storage tank and fuel bund etc.).</p> <p>The potential for an uncontrolled direct effect on ground and groundwater as a result of the proposed development is unlikely given the following:</p> <ul style="list-style-type: none"> • The adoption of a robust set of mitigation measures to protect soil, geology, and hydrogeology in the receiving environment. • The proposed facility will be designed in accordance with relevant Best Available Techniques for waste facilities defined in the Commission Implementing Decision (EU) establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council. • The proposed facility will operate in accordance with an Industrial Emissions (IE) licence. • Groundwater monitoring will be carried out on an ongoing basis in accordance with the terms of the IE licence, which will serve to demonstrate the proposed development is not having an impact on groundwater quality. <p>The Soils, Geology and Hydrogeology chapter has therefore concluded there will be no significant impact on the receiving grounds or groundwaters because of the proposed development.</p> <p>As such, there will be no deterioration in the quality status of groundwater contained in the receiving environment. Humans who could potentially utilise such groundwater for farming or drinking water purposes for example will not be negatively affected by the proposed development therefore.</p>



Interaction	Description
Population and Human Health & Hydrology and Surface Water	<p>Potential, accidental, aqueous emissions from the proposed development (e.g., 'dirty' water discharges, release of fuels or oils) may negatively impact the receiving surface water environment. Such impacts may negatively affect the quality status of the receiving waters downstream, which in turn may negatively impact upon the recreation and amenity value attained by humans who downstream surface waters (e.g., anglers)</p> <p>A comprehensive set of mitigation measures to prevent such impacts has been defined in Chapter 10 Hydrology and Surface Water Quality, of Volume 2 of this EIAR.</p> <p>The Hydrology and Surface Water chapter has concluded there will be no significant impact on receiving surface waters because of the proposed development. As there will be no deterioration in the quality status of the receiving surface waters, including the River Tolka, human users of these surface water will experience no diminution of recreation or amenity value gained from the river.</p>
Population and Human Health and Air Quality and Climate	<p>Dust, odour, and climate impacts associated with the construction and operational phases of the proposed development may have a negative impact on human receptors.</p> <p>Dust generated during construction and operational phase activities may cause nuisance to sensitive human receptors in the vicinity of the development site.</p> <p>Odour generated during the operational phase of the proposed development may cause nuisance and disturbance sensitive human receptors in the local area.</p> <p>The Air and Climate Chapter (Chapter 11 of Volume 2 of this EIAR) has concluded that there will not be an adverse impact on nearby sensitive receptors due to dust or odour associated with the proposed development.</p> <p>Dust mitigation measures will be adopted during the construction and operational phases to prevent negative dust impacts affecting humans.</p> <p>Odour modelling based on the USEPA approved AERMOD model has found that the worst-case scenario for the 98thile of 1-hour concentrations occurs in 2021 and is less than the applicable odour guideline/limit value of 1.5 OUE/m³ at the worst-case receptor (63% of this value). Based on these results, no nearby human receptors are predicted to experience odour nuisance issues because of the proposed development.</p> <p>The proposed development will not have any significant adverse impact in terms of climate change. The proposed development has the potential to have a residual benefit with respect to climate by diverting biodegradable waste from landfill and therefore reducing the wastes embodied carbon and the generation of landfill gas, reducing the potential for greenhouse gas emissions. This potential residual benefit is of benefit to society and humans.</p>
Population and Human Health and Noise and Vibration	<p>Noise generation during the construction and operational phases of the proposed development has the potential to negatively impact upon sensitive human receptors in the vicinity of the development site.</p> <p>Noise prediction modelling has been carried out under the Noise and Vibration chapter (Chapter 12 of Volume 2 of this EIAR) to assess potential noise impacts on sensitive human receptors associated with the construction and operational phases of the proposed development</p> <p>The predicted noise levels at sensitive human receptors due to the carrying out of construction phase activities do not exceed relevant construction noise limits, which have been set for the protection of human receptors.</p>



Interaction	Description
	<p>The predicted noise levels at sensitive human receptors due to the carrying out of operational phase activities do not exceed relevant EPA prescribed noise limits for day, evening or night, which have been set for the protection of human receptors. This noise prediction modelling assumed embedded noise mitigation in the form of sound insulating cladding being used on building façades.</p> <p>Noise associated with the construction and operational phases of the proposed development will therefore not have any significant effect on humans present at noise sensitive receptors in the vicinity of the development site (with the adoption of the embedded mitigation measure – sound insulating cladding at building façades).</p>
Population and Human Health & Traffic and Transport & Noise and Vibration	<p>The proposed development will generate traffic during both the construction and operational phases of the proposed development.</p> <p>Increased traffic movements have the potential to; impact on the structural integrity of the road, cause increased congestion, present increased health and safety risks (associated with road traffic accidents) and generate excessive noise at sensitive human receptors. Such impacts may negatively affect the experience of road users and create increased health and safety risks to road users. The Traffic and Transportation chapter (Chapter 13 of Volume 2 of this EIAR) has however concluded that there will be an imperceptible impact in terms of traffic on local roads during both the construction and operational phases of the proposed development. Consequently, the residual effect on road user experience and health and safety risk on the local road network will not be significant.</p> <p>As regards noise impacts associated with increased traffic due to the proposed development – The Noise and Vibration chapter of this EIAR has concluded that development related traffic will cause a negligible increase in traffic noise levels (a noise level increase of less than 0.5 dB) and will have no significant impact on sensitive receptors.</p>
Geology and Hydrogeology, Population and Human Health & Cultural Heritage Impact Assessment	<p>Groundworks undertaken during the construction phase of the proposed development have the potential to have negative effect on any previously unrecorded archaeological remains that may exist within the development site.</p> <p>Damage or deterioration caused to such archaeological remains may negatively affect the historic, social or cultural heritage value associated with the remains. This loss of value would be experienced by humans.</p> <p>The Cultural Heritage chapter of this EIAR (Chapter 14 of Volume 2 of this EIAR) proposes that archaeological monitoring of all groundworks associated with the construction phase of the proposed development is carried out. Monitoring will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring.</p> <p>With the adoption of this mitigation measure the groundworks required during construction are unlikely to have a negative impact upon any archaeological remains within the footprint of the proposed working area or the associated historic, social or cultural heritage value attached to such remains by humans.</p>
Landscape and Visual Impact Assessment & Cultural Heritage Impact Assessment & Population and Human Health	<p>A proposed development of this nature has the potential to impact on landscape character and visual amenity. This in turn has the potential to impact on people experiencing the landscape in which development site is situated, or present at visual receptors.</p>



Interaction	Description
	<p>A Landscape Mitigation Plan has been developed for the proposed development. This plan proposes that screening be provided along the site perimeter to screen views from off-site visual receptors, including the M50 and Premier Business Park.</p> <p>The Landscape and Visual Impact chapter of this EIAR (Chapter 15 of Volume 2 of this EIAR) has concluded the following:</p> <ul style="list-style-type: none"> • The construction and operational phases of the proposed development will not have a 'substantial' or 'significant' negative impact on landscape character or visual amenity. • The proposed development will not significantly alter landscape character or amenity by its character, or magnitude, having regard to the baseline environment in which the proposed development is located. <p>As a consequence, there will be no diminution in recreation or amenity value gained by humans experiencing the physical landscape and visual context around the proposed development site.</p>
Population and Human Health & Geology and Hydrogeology, Hydrology and Surface Water Quality & Biodiversity	<p>The potential susceptibility of the proposed development to major accidents and natural disasters is considered in the Population and Human Health chapter (Chapter 7 of Volume 2 of this EIAR). Potential major accidents which may occur on-site during facility operations include fire, fire spread to large quantities of combustible waste, contaminated firewater run-off and chemical/environmental spillage.</p> <p>These events have potential to impact on soils, geology and hydrogeology, hydrological regimes, water quality, human health and safety of workers and the public, material assets including property, roads and infrastructure and natural resources, and biodiversity.</p> <p>With the adoption of the comprehensive set of mitigation measures contained in the Population and Human Health chapter, including mitigation measures from other chapters which have been cross-referenced in the Population and Human Health chapter, health and safety specific mitigation measures and major accident-related mitigation measures, it is not envisaged that the proposed development will have any significant effect on any population or human health element.</p>
Hydrology and Surface Water Quality & Geology and Hydrogeology & Population and Human Health & Biodiversity	<p>Environmental pathways exist between land, groundwater and surface water. Pollution affecting one medium at or around the proposed development site has the potential to disperse or migrate to another (E.g., the content of the sites 'dirty' water storage tank could accidentally seep into ground, before percolating to groundwater. Groundwater flow may then carry this polluting material to a connected surface water body fed by the groundwater aquifer).</p> <p>In turn, such pollution may impact upon Population and Human Health and/or Biodiversity elements. Both the Hydrology and Surface Water Quality & Geology and Hydrogeology chapters (Chapters 9 and 10 of Volume 2 of this EIAR respectively) have concluded that, with the adoption of the proposed mitigation measures, there is no significant risk to receiving lands, groundwater or surface water at the development site.</p>
Hydrology and Surface Water Quality and Biodiversity	<p>As detailed in the Biodiversity chapter (Chapter 8 of Volume 2 of this EIAR), reductions in water quality at receiving waters (e.g., the River Tolka) may negatively impact on the ecological quality status of the receiving surface waters and eco-systems, habitats and species within or reliant on these surface waters.</p>



Interaction	Description
	The adoption of the mitigation measures defined in the Hydrology and Surface Water Quality chapter (Chapter 10 of Volume 2 of this EIAR) will ensure that there will be no significant negative impact on the receiving surface waters associated with the proposed development. Consequently, there will be no negative impacts on eco-systems, habitats and species within or reliant on the river.
Biodiversity & Air Quality and Climate & Geology and Hydrogeology & Traffic and Transport	<p>Dust emissions associated with the construction and operational phases of the proposed development have the potential to negatively impact ambient air quality which in turn can result in a negative impact on ecological receptors surrounding the site.</p> <p>The Dust Impact Assessment undertaken in the Air and Climate chapter (Chapter 11 of Volume 2 of this EIAR) has determined that there are no sensitive ecological sites in the immediate vicinity of the proposed development site, with the nearest sensitive receptor being the Royal Canal pNHA 1.5 km south-west of the proposed development. As such, construction phase dust generation will not have a significant effect on any ecological receptor.</p> <p>A comprehensive set of construction and operational phase dust mitigation measures are in place to prevent the generation of dust which may affect ecological receptors (e.g., indoor processing, dust minimisation plan, water misting, dust monitoring)</p>
Biodiversity and Noise	<p>Noise emissions associated with the proposed development may negatively impact surrounding ecological receptors.</p> <p>The Biodiversity chapter of this EIAR has concluded that construction noise will only have a slight, temporary, reversible effect on the avifauna population, and that operational phase noise will not have any significant effect on ecological receptors with the adoption of proposed noise mitigation measures.</p>
Traffic and Transport & Air Quality and Climate & Population and Human Health	<p>Traffic emissions associated with development related traffic may lead to a deterioration of local air quality which in turn may negatively impact upon human respiratory health.</p> <p>The significance of potential air quality impacts from increased traffic associated with the proposed development been determined within the Air and Climate chapter (Chapter 11 of Volume 2 of this EIAR). Traffic emission modelling in this chapter shows that development related traffic will have a negligible impact in terms of local air quality.</p> <p>Traffic emission may also contribute to climate change and result in impacts in humans in this regard. The Air and Climate chapter predicts that proposed development related traffic will increase CO2 emissions by 0.00007% of the EU 2020 target by 2025, and by 00009% of the 2030 target by 2040.</p>



16.3 Conclusions

The proposed development has the potential to impact on various environmental topics, as detailed throughout this EIAR.

There are inter-relationships and interactions between these environmental topics, which may cause an environmental impact that is not perceptible when a topic is considered on its own, exclusively.

The impact inter-relationship and interaction assessments undertaken within each environmental topic chapter of this EIAR and within this dedicated chapter have concluded that environmental topic interactions will not result in any residual, significant, adverse environmental (with the adoption of the mitigation measures defined throughout this EIAR).



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