

19 Interactions of the Foregoing

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19.1 Introduction

This Chapter was prepared by Brock McClure, Planning and Development Consultants, in conjunction with the other appointed consultants who assisted in preparation of this EIAR. The purpose of this chapter is to identify and draw attention to significant interactions and interdependencies in the existing environment between all environmental factors.

Impact interactions and inter-relationships have been considered throughout the environmental assessment process and in the preparation of individual, topic specific chapters of this EIAR in order to facilitate a holistic assessment of how the proposed scheme may affect various environmental factors. All environmental topics are interlinked to a degree, and this chapter contains an analysis of the interrelationships between specific environmental influences.

As referenced throughout this EIAR, criteria for evaluating impact levels and definitions of the magnitude of any effects follow the EPA ‘Guidelines on the Information to be Contained in Environmental Impact Assessment Reports’ (Draft 2017) guidance and Government of Ireland ‘Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment’(2018). The magnitude of effects considers the likely scale of the predicted change to the baseline conditions resulting from the predicted effect, taking into account the duration of the effect i.e. temporary or permanent.

19.2 Descriptions of Interactions and their Significance

As outlined, consideration of impact interactions has been addressed during the preparation of the environmental assessment in each of the individual impact chapters. A detailed analysis of how each environmental factor is impacted holistically is addressed herein.

Population & Human Health

The individual EIAR chapters have addressed the interactions with population and these can be summarised as follows:

- **Air Quality** - Interactions between air quality and human beings can also be considered significant. An adverse impact to air quality during either the construction or operational phases has the potential to cause health impacts and dust nuisance issues. The dust mitigation measures that will be put in place on-site during construction will ensure that the impact of the development complies with all ambient air quality legislative limits and therefore the predicted impact is short-term and imperceptible with respect to air impacts on human health during the construction phase.

In relation to interactions between air quality and human health during the operational phase, the results of the quantitative assessment conducted to assess the air quality and climate impacts from changes in traffic flows during the operational phase of the assessment demonstrate that the impacts will be long-term and imperceptible. Results show that concentrations of ambient air pollutants with the proposed development in place will be compliant with all ambient air quality limit values which are based on the protection of human health.

Risks to Human Health have been considered by each discipline of the EIAR. The following disciplines have potential for significant impacts on human health:

- **Land & Soils** - Risks to Human Health associated with works during the construction phase in relation to land and soils include:
 - Work which puts persons at risk of burial under earthfall e.g. during basement excavation.
 - Works that could undermine existing foundations
 - Works in relation to subsoils impacted by hydrocarbons

- Contact with existing underground services e.g. gas leaks or electrocution.
 - Access and egress from the site and interface with site staff and / or the public e.g. Risk of slips, trips and falls
 - Dust generation
 - Use of machinery and plant e.g. risk of injury to personnel and damage to plant and machinery due to improper use.
- **Water** -The following risk to human health can occur during construction:
 - Cross contamination of potable water supply to construction compound.

With the implementation of the aforementioned mitigation measures, the likelihood of such events occurring would be local and not significant.

Risks to Human Health associated with works during the construction phase associated with Water and Hydrology include:

- Work which puts persons at risk of burial under earthfall e.g. risk of injury to personnel from trench collapse.
 - Contact with existing underground services e.g. gas leaks or electrocution.
 - Works adjacent to live traffic and pedestrian cycle movements e.g. risk to public in terms of working on public road and footpath associated with provision of a water connection.
 - Access and egress from the site and interface with site staff and / or the public e.g. Risk of slips, trips and falls.
 - Work in confined spaces e.g. asphyxiation.
 - Use of machinery and plant e.g. risk of injury to personnel and damage to plant and machinery due to improper use.
- **Noise & Vibration** - In terms of the noise exposure of construction workers and potential hearing damage that may be caused due to exposure to high levels of noise, the Safety, Health and Welfare at Work (General Application) Regulations 2007 (Statutory Instrument No. 299 of 2007) provides guidance in terms of allowable workplace noise exposure levels for employees. The Regulations specify two noise Action Levels at which the employer is legally obliged to reduce the risk of exposure to noise. The appointed contractor will be required to comply with the Regulations and provide appropriate noise exposure mitigation measures where necessary. The noise exposure level to off-site receptors during the construction phase will be below the lower Action Level and therefore the risk of noise exposure resulting in potential hearing damage to off-site receptors is minimal.
 - **Air Quality & Climate** - Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the air quality impact of construction of the proposed development will be short-term and imperceptible with respect to human health.

Air dispersion modelling of operational traffic emissions was undertaken to assess the impact of the development with reference to EU ambient air quality standards which are based on the protection of human health. As demonstrated by the modelling results (see section 10.10) emissions as a result of the proposed development are compliant with all National and EU ambient air quality limit values and, therefore, the impact on human health will be long-term and imperceptible.
 - **Utilities** - Risks to Human Health associated with works during the construction phase in the vicinity of existing utilities include:

- Work which puts persons at risk of burial under earthfall e.g. risk of injury to personnel from trench collapse.
 - Contact with existing underground services e.g. gas leaks or electrocution.
 - Works adjacent to live traffic and pedestrian cycle movements e.g. risk to public in terms of working on public road and footpath.
 - Access and egress from the site and interface with site staff and / or the public e.g. Risk of slips, trips and falls.
 - Work in confined spaces e.g. asphyxiation.
 - Use of machinery and plant e.g. risk of injury to personnel and damage to plant and machinery due to improper use.
- **Waste Management** - Best practice waste management measures are proposed for the management of construction phase wastes which will ensure that materials are segregated and stored appropriately. Waste materials generated during the construction phase will not pose a risk to local human health as a result of their inert nature. Domestic waste generated by construction staff shall be stored in wheelie bins to minimise the presence of vermin on site. Wastes shall be collected on at least a weekly basis.

The management of domestic wastes generated during the operational phase which ensure that wastes are segregated at source in each residential unit to facilitate the diversion of mixed waste away from landfill/incinerator and to maximise the potential for re-use and recycling. Communal waste storage areas shall be designed to provide a clean, safe and mobility impaired accessible area in which residents can place their wastes in one of three bulk waste bins, namely recyclable, organic, mixed non-recyclable. The waste storage areas will be regularly cleaned and disinfected and shall be naturally ventilated to prevent odours occurring. Therefore, the impact of construction waste and operational waste arising associated with the proposed development is likely to be negative, short-term and imperceptible with respect to human health.

Biodiversity

Risks to Biodiversity have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Biodiversity:

- **Landscape & Visual Impact Assessment** – New planting for aesthetic and/or ornamental purposes will provide some additional habitat for common plants and animals which are already present in this locality. Landscaping has been designed for multiple benefits and includes a range of native and non-native species. Given that there are no semi-natural features of wildlife value on the site currently, this represents a net benefit for biodiversity.
- **Water** --The management of surface water run-off from the development site has been designed to incorporate Sustainable Drainage Systems and which will prevent pollution or excessive pulse flows of run-off during flood events. While the development site is not in the catchment of any river or water body of significant fisheries value, these measures will ensure that not negative impacts occur to water bodies in freshwater or marine ecosystems
- **Land & Soils** - Removal of the existing topsoil layer will be required across the site.

Land & Soils

Risks to Lands and Soils have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Land and Soils:

- **Traffic and Transportation** - Delivery of materials to site (e.g. aggregates for road construction, concrete for foundations, delivery of construction plant to site) will lead to potential impact on the surrounding road network.

- **Water and Hydrology** - Stripping of topsoil will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result subsoil erosion and generation of sediment laden surface water runoff.

The presence of groundwater at bedrock level will necessitate dewatering during construction.

Surface water runoff during the construction phase may lead to erosion and contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities.

Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).

As noted in Chapter 7 Land and Soils (Section 7.3.1, Section 7.4 and Section 7.5.1.2) an area of the site adjacent to the neighbouring filling station has been impacted by hydrocarbons. It is proposed to remove subsoil impacted by hydrocarbons which are affected by the proposed development (refer to Table 7.3).

The Contractor is to provide a Method Statement (to be agreed prior to commencing any works on site) for works in the vicinity of areas impacted by hydrocarbons including but not limited to details of proposals for containment of contamination, proposal for removal of hydrocarbons from dewatered groundwater prior to discharge and compliance with relevant legislation including HSA publications and the Waste Management Act.

- **Waste Management** -Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility.
- **Noise and Vibration** -Development of the site will result in a level of construction related noise and vibration.
- **Air Quality** -Dust generation can also occur during extended dry weather periods as a result of construction traffic.
- **Utilities** - Trench excavations to facilitate site service installation will result in exposure of subsoils to potential erosion and subsequent sediment generation. Mitigation measures are outlined in Chapter 7 Land & Soils (i.e. service trenches to be backfilled as soon as practicable to minimise potential erosion of subsoils).
- **Biodiversity** -Removal of the existing topsoil layer will be required across the site.

Water

Risks to Water have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Water:

- **Land & Soils** - Stripping of topsoil will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result subsoil erosion and generation of sediment laden surface water runoff.

The presence of groundwater at bedrock level will necessitate dewatering during construction.

Surface water runoff during the construction phase may lead to erosion and contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities.

Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).

As noted in Chapter 7 Land and Soils (Section 7.3.1, Section 7.4 and Section 7.5.1.2) an area of the site adjacent to the neighbouring filling station has been impacted by hydrocarbons. It is

proposed to remove subsoil impacted by hydrocarbons which are affected by the proposed development (refer to Table 7.3).

The Contractor is to provide a Method Statement (to be agreed prior to commencing any works on site) for works in the vicinity of areas impacted by hydrocarbons including but not limited to details of proposals for containment of contamination, proposal for removal of hydrocarbons from dewatered groundwater prior to discharge and compliance with relevant legislation including HSA publications and the Waste Management Act.

- **Biodiversity** – The management of surface water run-off from the development site has been designed to incorporate Sustainable Drainage Systems and which will prevent pollution or excessive pulse flows of run-off during flood events. While the development site is not in the catchment of any river or water body of significant fisheries value, these measures will ensure that not negative impacts occur to water bodies in freshwater or marine ecosystems.

Noise & Vibration

Risks to Noise and Vibration have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Noise and Vibration:

- **Traffic & Transport** - In terms of residual impacts, the projected increase in vehicle traffic during the construction stage may lead to a slight increase in noise and vibration along the adopted construction haul route. However, such effects will be temporary in nature.

The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods, however, implementation of the mitigation measures described in Section 13.11 will prevent and minimize the potential impacts of this interaction.

- **Land & Soils** - Development of the site will result in a level of construction related noise and vibration.

Air Quality and Climate

Risks to Air Quality and Climate have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Air Quality and Climate:

- **Traffic & Transport** - The most significant interaction with respect to air quality and climate is with respect to traffic and transportation. Traffic data for the local road links affected by the proposed development and nearby developments for the opening and design years was provided for both the Do Nothing and Do Something Scenarios. This information has been used as an input for the air quality and climate assessment of the operational phase of the proposed development. The results of this assessment predict that the impacts to air quality and climate from a change in traffic flows as a result of the proposed development will be long-term and imperceptible.

Post construction development traffic will contribute to increased traffic volumes on the surrounding road network which in turn will decrease air quality. As detailed in Chapter 10, none of the road links impacted by the proposed development satisfied the assessment criteria and it was therefore determined that the impact to air quality is imperceptible for the long and short term.

- **Population & Human Health** - Interactions between air quality and human beings can also be considered significant. An adverse impact to air quality during either the construction or operational phases has the potential to cause health impacts and dust nuisance issues. The dust mitigation measures that will be put in place on-site during construction will ensure that the impact of the development complies with all ambient air quality legislative limits and therefore the predicted impact is short-term and imperceptible with respect to air impacts on human health during the construction phase.

In relation to interactions between air quality and human health during the operational phase, the results of the quantitative assessment conducted to assess the air quality and climate impacts from changes in traffic flows during the operational phase of the assessment demonstrate that the impacts will be long-term and imperceptible. Results show that concentrations of ambient air pollutants with the proposed development in place will be compliant with all ambient air quality limit values which are based on the protection of human health.

- **Land & Soils** - Dust generation can also occur during extended dry weather periods as a result of construction traffic.

Wind and Microclimate

Risks to Wind and Microclimate have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Wind and Microclimate:

- **Landscape** - There are interactions between the Wind & Microclimate chapter and the landscaping chapters. Any change in landscaping plans i.e. reduction in vegetation may affect the results obtained in the wind study and could make them worse. Any additions are likely to only improve the results seen here.

Landscape & Visual and Impact Assessment

Risks to Landscape & Visual Impact Assessment have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Landscape and Visual Impact Assessment:

- **Biodiversity** - New planting for aesthetic and/or ornamental purposes will provide some additional habitat for common plants and animals which are already present in this locality. Landscaping has been designed for multiple benefits and includes a range of native and non-native species. Given that there are no semi-natural features of wildlife value on the site currently, this represents a net benefit for biodiversity.
- **Wind & Microclimate** - There are interactions between the Wind & Microclimate chapter and the landscaping chapters. Any change in landscaping plans i.e. reduction in vegetation may affect the results obtained in the wind study and could make them worse. Any additions are likely to only improve the results seen here.

Material Assets – Traffic and Transport

Risks to Traffic and Transport have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Traffic and Transport:

- **Land and Soil:** The volumes of surplus soils generated by the scheme will influence construction stage traffic generation. Measures to optimise design and minimise material generation are detailed in Chapter 15 whilst measures to mitigate against construction stage traffic impacts have been identified in Section 13.9.
- **Noise and Vibration:** In terms of residual impacts, the projected increase in vehicle traffic during the construction stage may lead to a slight increase in noise and vibration along the adopted construction haul route. However, such effects will be temporary in nature.

The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods, however, implementation of the mitigation measures described in Section 13.11 will prevent and minimize the potential impacts of this interaction.

- **Air Quality:** Post - construction development traffic will contribute to increased traffic volumes on the surrounding road network which in turn will decrease air quality.

As detailed in Chapter 10, none of the road links impacted by the proposed development satisfied the assessment criteria and it was therefore determined that the impact to air quality is imperceptible for the long and short term.

Material Assets - Utilities

Risks to Utilities have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Utilities:

- **Land & Soils** - Trench excavations to facilitate site service installation will result in exposure of subsoils to potential erosion and subsequent sediment generation. Mitigation measures are outlined in Chapter 7 Land & Soils (i.e. service trenches to be backfilled as soon as practicable to minimise potential erosion of subsoils)

Material Assets - Waste Management

Risks to Waste Management have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Waste Management:

- **Land & Soils** - Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility.

Archaeological, Architecture & Cultural Heritage

No interactions have been identified in relation to the assessment of the archaeological, architectural and cultural heritage resource and the potential impacts of the proposed development on same.

Daylight and Sunlight

No interactions have been identified in relation to the assessment of daylight and sunlight and the potential impacts of the proposed development on same.

19.3 Conclusion

A summary of the interactions is summarised in the table below.

Environmental Impact Assessment Report - Lands at Cornelscourt Village, Old Bray Road, Cornelscourt, Dublin 18

Interaction	Population & Human Health		Biodiversity		Lands and Soils		Water		Noise & Vibration		Air & Climate		Wind & Microclimate		Landscape & Visual Impact Assessment		Material Assets - Traffic and Transport		Material Assets - Utilities		Material Assets - Waste Management		Archaeology, Architecture & Cultural Heritage	
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Population & Human Health	✓	✓	✗	✗	✓	✗	✓	✗	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗	✓	✗	✓	✓	✗	✗
Biodiversity			✓	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Lands & Soils					✓	✓	✓	✗	✓	✗	✓	✗	✗	✗	✗	✗	✓	✗	✓	✗	✓	✗	✗	✗
Water							✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Noise & Vibration									✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗
Air & Climate											✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗
Wind & Microclimate													✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Landscape & Visual Impact Assessment														✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Material Assets - Traffic and Transport																	✓	✓	✗	✗	✗	✗	✗	✗
Material Assets - Utilities																			✓	✓	✗	✗	✗	✗
Material Assets - Waste Management																					✓	✓	✗	✗
Archaeology, Architecture & Cultural Heritage																							✓	✓

✓ - Interaction
✗ - No Interaction