

## 20 INTERACTIONS OF THE FOREGOING

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## 20.1 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.

## 20.2 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:

- **Water:** There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development.
- **Air Quality and Climate:** An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisances. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits and therefore the predicted impact is long term and neutral with respect to human beings.
- **Landscape and Visual Impact Assessment:** As is always the case where a development will result in a change to the visual environment of an area, the visual impacts of the development on the built environment will result in interactions with population and human health and cultural heritage.
- **Material Assets - Traffic and Transport:** Temporary negative impacts to human health may be likely during the Construction Phase due to noise, dust, air quality and visual impacts which are discussed in the relevant chapters of this EIAR.
- **Material Assets - Utilities:** There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development.
- **Daylight and Sunlight:** As is always the case where a development will result in a change to the sunlight and daylight environment of an area, the impacts of the development on sunlight access will result in interactions with climate, population and human health and the landscape.

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

- **Lands and Soils:** A potential risk to human health due to the associated works during construction is the direct contact, ingestion or inhalation of receptors (i.e. construction workers) with any soils which may potentially contain low level hydrocarbon concentrations from Site activities (potential minor leaks, oils and paint).

No human health risks associated with long term exposure to contaminants (via. direct contact, ingestion or inhalation) resulting from the proposed development are anticipated.

- **Water:** There is a risk to Human Health should the ground water or the existing water supply become contaminated during the construction or operational stages, and the water is consumed. In order to mitigate these risks the measures outlined in chapter 21 will be adopted.
- **Noise and Vibration:** Construction phase noise and vibration emissions will be temporary and transient and will be managed so as to minimise impact to population and human health by complying with all relevant guidance, as such the impact will be short-term and have a slight impact overall.

Operational phase noise will also be managed to achieve relevant noise limit values and is predicted to meet all such requirements. No operational phase vibration impacts are predicted. Therefore, the operational phase noise impacts will be neutral for the life of the development.

- **Air & Climate:** Emissions from construction phase is likely to be negative, short term and imperceptible with respect to human health. At operational stage, traffic emissions will not result in a significant impact on human health.
- **Landscape & Visual:** The character of the impact of changes to the visual environment on human health (positive, negative or neutral) will depend on how well a development is received by the public, and on the general contribution of the development to the built environment. The character of a visual impact, and even the duration of a visual impact, is very dependent on the attitude of the viewer. If a viewer is opposed to a new building for reasons other than visual, that viewer is likely to see the building in a negative light, no matter how beautiful the building might be.
- **Material Assets - Traffic and Transport:** A number of temporary risks to human health may occur during construction phase related to noise, dust, air quality and visual impacts which are addressed in other sections of this EIAR. There will be a slight increase in traffic on the local road network.
- **Material Assets - Utilities:** There are potential implications for the local populations if there are disruption to utility services during the connection of the new services to the proposed development.
- **Material Assets - Waste Management:** The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific C&DWMP and OWMP, will ensure appropriate management of waste and avoid any negative impacts on the local population.
- **Daylight and Sunlight:** As is always the case where a development will result in a change to the sunlight and daylight environment of an area, the impacts of the development on sunlight access will result in interactions with climate, population and human health and the landscape.

### **Biodiversity**

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

- **Water:** The key environmental interaction with Biodiversity is Water (Chapter 8). Chapter 8 – Water of this EIA document proposes measures to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) is of an appropriate standard.

### Land & Soils

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

- **Water:** Interaction due to the likely changes in depth and type of overburden impacting the protection provided to aquifers. The likely impact will be neutral, permanent and slight. In addition, surface water conveyed and stored in SuDS features such as soakaways and discharging to the ground where possible, replicating the existing greenfield site drainage as closely as possible. The likely impact will be permanent, slight and neutral.
- **Material Assets - Utilities:** Interactions associated with the construction of drainage, utilities and rock excavation for basement impacting the quantity of soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be permanent slight, permanent and negative. Further interactions with the delivery of stone fill under buildings and roads and footpaths resulting in additional construction vehicles on roads adjacent to the site. The likely impact will be negative, temporary and slight.
- **Air Quality & Climate:** Dust Nuisances due to excavations at construction stage.
- **Noise and Vibration:** Rock breaking and excavations will give rise to noise.

### Water

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

- **Population & Human Health:** There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development
- **Land & Soils:** Interaction with water and with changes in depth and type of overburden impacting the protection provided to aquifers. The likely impact will be neutral, permanent and slight. There are interactions between water and land and soils, with some surface water conveyed and stored in SuDS features such as soakaways and discharging to the ground where possible, replicating the existing greenfield site drainage as closely as possible. The likely impact will be permanent, slight and neutral.
- **Material Assets – Utilities:** During construction stage, the connection of wastewater services has the potential to impact ground water if wastewater were to leak from the network during the construction process. During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

### Noise & Vibration

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

- **Traffic and Transport:** Noise generated from increased traffic flow.

### 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:

- **Population & Human Health:** An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisances. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits and therefore the predicted impact is long term and neutral with respect to human beings.
- **Land and Soils:** Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils. No other significant interactions with air quality have been identified.
- **Traffic & Transport:** With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be not significant.

### 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 & Visual Impact Assessment:** The interactions between the proposed development and landscaping is fundamental to mitigate the unwanted impact of wind. Landscaping has reduced and re-directed the flow velocity of the incoming wind in the areas that were found to be critical.
- **Cultural Heritage:** The interaction with the existing and surrounding developments has also been evaluated. In particular, the presence of urban environment has a beneficial effect in mitigating the impact of incoming south-west wind, however some funnelling effects are expected. The prevailing wind directions for the site are identified in the West, West South-West and South- East with magnitude of approximately 6m/s. In all these directions the development area the mitigated conditions have been obtained with the use of tree landscaping.

### 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:** It is proposed to remove 136 no. of the 277 no. existing trees on site. Many of the trees to be removed are former garden trees of the houses fronting Leopardstown Road. The tree loss breakdown for the proposed development will be
  - 51 Category "B" items – Fair quality
  - 64 category "C" items – poor quality
  - 21 category "U" trees – Unsustainable

It is further proposed to plant 188 no. new trees, which would result in a net gain of 52 no. trees for the overall site. This would result in (a) a net gain in the number of trees, and (b) a net gain in the condition of the site vegetation since a large proportion of the trees to be removed are in poor condition. This would have biodiversity benefits.

- **Population and Human Health:** The proposed development would introduce a new, high density residential neighbourhood to the townscape, making more sustainable use of the valuable urban land resource. The proposal includes a substantial area of communal and public open space internally and provides direct access to an adjacent greenway and a large area of public open space. These resources would encourage outdoor activity, with positive human health impacts. The location of the new neighbourhood in a large, evolving urban district would encourage sustainable mobility, with additional positive effects on the health of the population (and on the county's contribution to greenhouse gas reduction).
- **Cultural Heritage:** The proposed development would retain St Joseph's House as a signature feature. The condition and setting of the protected structure would be improved by the development.

### **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:

- **Population & Human Health:** Temporary negative impacts to human health may be likely during the Construction Phase due to noise, dust, air quality and visual impacts which are discussed in the relevant chapters of this EIAR.
- **Noise & Vibration:** Temporary negative impacts to human health may be likely during the Construction Phase due to noise, dust, air quality and visual impacts which are discussed in the relevant chapters of this EIAR.
- **Air Quality & Climate:** Temporary negative impacts to human health may be likely during the Construction Phase due to noise, dust, air quality and visual impacts which are discussed in the relevant chapters of this EIAR.
- **Landscape and Visual Impacts:** Temporary negative impacts to human health may be likely during the Construction Phase due to noise, dust, air quality and visual impacts which are discussed in the relevant chapters of this EIAR.
- **Material Utilities - Utilities:** In addition, temporary traffic management will be required to facilitate connections to existing utilities in the existing roads.

### **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:

- **Population and Human Health:** There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development.
- **Water:** During construction stage, the connection of wastewater services has the potential to impact the local surface water from a hydrology and hydrogeology perspective. During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.
- **Material Assets Traffic and Transport:** The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

### **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 and Soil:** During the construction phase excavated soil and stone will be generated from the excavations required to facilitate construction of facilitate basement completion and construction of new foundations, the installation of underground services and attenuation tank. It is envisaged that all of this material will be taken offsite for reuse or recovery, where practical, with disposal as last resort.
- **Material Assets Traffic and Transportation:** Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 13 Traffic and Transportation.
- **Population & Human Health**

The potential impacts on human beings in relation to the generation of waste during the Construction and Operational Phases are that incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific C&D WMP and OWMP, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be *long-term, imperceptible* and *neutral*.

#### **Archaeological, & 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.

#### **Architectural & Built Heritage**

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

#### **Daylight and Sunlight**

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

- **Population & Human Health:** As is always the case where a development will result in a change to the sunlight and daylight environment of an area, the impacts of the development on sunlight access will result in interactions with climate, population and human health and the landscape.
- **Air Quality & Climate:** As is always the case where a development will result in a change to the sunlight and daylight environment of an area, the impacts of the development on sunlight access will result in interactions with climate, population and human health and the landscape.
- **Landscape & Visual Impact Assessment:** As is always the case where a development will result in a change to the sunlight and daylight environment of an area, the impacts of the development on sunlight access will result in interactions with climate, population and human health and the landscape.

## **20.3 Conclusion**

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

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