

21 SUMMARY OF INTERACTIONS

21.1 Introduction

This chapter of the EIAR identifies the principle interactions between the potential impacts of the environmental factors identified in Chapter 5 to 18 inclusive.

The principal interactions are summarised below, under Table 21.1, and further discussed in Section 21.2 of this Chapter.

Con.	Construction Phase	✓	Weak Interaction
Op.	Operational Phase	✓	Some Interaction
X	No Interaction	✓	Strong Interaction

	Population and Human Health		Biodiversity		Land, Soil and Geology		Water		Climate (Air Quality)		Climate (Climate Change)		Climate (Sunlight & Daylight)		Air, Noise and Vibration		Landscape and Visual Impact		Material Assets (Transport)		Material Assets (Waste)		Material Assets (Utilities)		Cultural Heritage (Archaeological & Architectural)	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Population and Human Health			X	X	X	X	X	X	✓	✓	X	X	✓	✓	X	X	✓	X	✓	X	✓	✓	✓	✓	X	X
Biodiversity	X	X			✓	X	✓	✓	✓	X	X	X	X	X	X	X	✓	✓	✓	X	✓	✓	✓	X	X	X
Land, Soil and Geology	X	X	✓	✓			✓	✓	✓	X	✓	✓	X	X	X	X	X	X	✓	X	✓	X	✓	X	X	X
Water	✓	X	X	X	✓	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Climate (Air Quality)	X	X	X	X	✓	X	X	X			X	X	X	X	X	X	X	X	✓	X	X	X	X	X	X	X
Climate (Climate Change)	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Climate (Sunlight & Daylight)	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
Air, Noise and Vibration	✓	✓	X	X	X	X	X	X	X	X	X	X	X	X			X	X	✓	X	X	X	✓	✓	X	X
Landscape and Visual Impact	✓	✓	X	X	X	X	X	X	X	X	X	X	✓	✓	X	X			X	X	X	X	X	X	X	X
Material Assets (Transport)	✓	✓	X	X	✓	✓	X	X	✓	✓	✓	✓	X	X	X	X	X	X			✓	X	X	X	X	X
Material Assets (Waste)	X	X	X	X	✓	✓	✓	X	X	X	✓	✓	X	X	X	X	X	X	✓	X			✓	X	X	X
Material Assets (Utilities)	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X
Cultural Heritage (Archaeological & Archaeology)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	✓	X	X	X	X	X	X		

Table 21.1: Matrix of Interactions between Environmental Factors (During Construction and Operational Phases)

21.2 Interactions

21.2.1 Population & Human Health (Chapter 5)

Water

Interactions between water and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of impacts on local drinking water. However, the mitigation measures outlined in Chapter 8 Water outlines that Proposed Development will not result in significant effects on water which therefore will not have a significant effect on the local population.

Air Quality

Interactions between air quality and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of impacts on air quality. However, the mitigation measures outlined in Chapter 9 Air Quality outlines that Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected.

Noise

Interactions between noise and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of noise and vibrations. However, the mitigation measures outlined in Chapter 12 Noise outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.

Landscape and Visual

Interactions between landscape and visual, and human health have been considered. The Proposed Development has the potential to cause nuisance to the local population. However, the mitigation measures outlined in Chapter 13 Landscape and Visual outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.

Transport

Interactions between transport and human health have been considered. The Proposed Development has the potential to cause a nuisance to the local population. However, the mitigation measures outlined in Chapter 14 Transport outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.

21.2.2 Biodiversity (Chapter 6)

There are interactions between this biodiversity chapter and the hydrology, and hydrogeology chapters due to the assessment impacts to designated sites and aquatic environments via hydrological and hydrogeological pathways. The groundwater and surface water impacts discussed in these chapters are considered applicable to this chapter with regard to S-P-R pathways. Any mitigation or considerations of the ground and surface water impacts contained within those chapters are relevant to the biodiversity assessment with regard to the aquatic environment.

21.2.3 Land, Soils, Geology & Hydrogeology (Chapter 7)

Population and Human Health

An assessment of the potential impact of the Proposed Development on human health is included in Chapter 5 of this EIAR.

There is a potential risk of dust generated from excavation and stockpiling of soil during the Construction Phase of the Proposed Development posing a human health risk in the absence of standard avoidance and mitigation measures which will be implemented to be protective of human health.

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase of the Proposed Development that will be protective of site workers.

Biodiversity

An assessment of the potential impacts of the proposed development on the biodiversity of the subject site, with emphasis on habitats, flora and fauna which may be impacted as is included in Chapter 6 of this EIAR such as potential pollution (i.e., dust arising from stockpiles) of waterbodies impacting on flora and fauna in the absence of mitigation measures.

Chapter 6 of this EIAR addresses impacts of the proposed development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

Water

An assessment of the potential impact of the proposed development on the existing hydrological and hydrogeological environment during the construction phase and operational phase of the proposed development is set out in Chapter 8. In the absence of avoidance and mitigation measures, there is a potential for sediments from excavated soils entering the local drainage network on public roads during the construction stage of the Proposed Development.

Air Quality and Climate

The excavation of soils across the Site and the temporary stockpiling of soils pending reuse or removal offsite has the potential to generate nuisance impacts (i.e., dust) during the construction stage of the Proposed Development. An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 9 of this EIAR

Material Assets: Traffic and Transport / Waste and Utilities

An assessment of the potential impact of the proposed development on the material assets including traffic and transport, and waste and utilities are included in Chapter 14 and Chapter 15 of this EIAR respectively.

Where possible, it is intended to retain and re-use the excavated soil and subsoil on the site for engineering fill and landscaping. However, it is anticipated that surplus material will require removal offsite. Soil not suitable for reuse offsite will be removed by an authorised contractor to a receiving waste facility.

There is also a requirement to import aggregates during the construction stage of the Proposed Development.

21.2.4 Water (Chapter 8)

Population and Human Health

An assessment of the potential impacts of the proposed development on human health is included in Chapter 5 of this EIAR.

No public health issues associated with the water (hydrology and hydrogeology) conditions at the subject site have been identified for the construction phase or operational phase of the proposed development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers

Biodiversity

An assessment of the potential impacts of the proposed development on the biodiversity of the subject site, with emphasis on habitats, flora and fauna which may be impacted as is included in Chapter 6 of this EIAR such as potential pollution of waterbodies impacting on flora and fauna in the absence of mitigation measures.

Chapter 6 of this EIAR addresses impacts of the proposed development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

Land, Soils and Geology

An assessment of the potential impact of the proposed development on the existing land, soils and geological environment during the construction phase and operational of the proposed development is set out in Chapter 7. In the absence of avoidance and mitigation measures, there is a potential for sediments from excavated soils entering the drainage network and tracking downstream during the construction phase.

Material Assets: Waste and Utilities

An assessment of the potential impact of the proposed development on the material assets including built services and infrastructure has been set out in Chapter 15 of this EIAR.

During the construction phase of the proposed development discharges of water to the public foul sewer will be in accordance with the necessary discharge licence issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations.

During the operation phase of the proposed development, any discharges to the public foul sewer and water supply to the proposed development will be under consent from UE.

21.2.5 Climate (Air Quality) (Chapter 9)

Population and Human Health

Interaction between air quality and population and human health have been considered as the Proposed Development has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as having an overall insignificant impact, therefore air quality impacts from the Proposed Development are not expected to have a significant impact on population and human health.

Biodiversity

Interactions between air quality and biodiversity have been considered as the construction phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant

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 during the construction phase. There are no potentially significant interactions identified between air quality, and land, soils and hydrogeology during the operational phase.

Climate

Air quality and climate have interactions as the emissions from the burning of fossil fuels during the construction phase generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

Traffic

There can be a significant interaction between air quality and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect air quality have been deemed not significant. Therefore, the impact of the interaction between air quality is not significant.

21.2.6 Climate (Climate Change) (Chapter 10)

Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are *direct, short-term, negative* and *imperceptible* during the construction phase and *direct, long-term, negative* and *imperceptible* during the operational phase, which is overall *not significant* in EIA terms.

Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO₂, a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be *direct, short-term, negative* and *not significant* during the construction phase and *direct, long-term, negative* and *not significant* during the operational phase, which is overall *not significant* in EIA terms.

Waste

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as

recycling. The effect of the interactions between waste and climate are considered to be *direct, short-term, negative* and *not significant* during the construction phase and *direct, long-term, negative* and *not significant* during the operational phase, which is overall *not significant* in EIA terms.

21.2.7 Climate (Daylight & Sunlight) (Chapter 11)

Population and Human Health

The high levels of both daylight and sunlight received by the units in the proposals, and the well-lit amenity areas would have a positive impact on human health for the future residents of the schemes.

Landscape

The massing and orientation of the proposed buildings will have very limited impact the shadows cast on the public amenity spaces.

21.3 Air (Noise & Vibration) (Chapter 12)

There is an interaction between noise and traffic through the generation of construction and operational stage traffic. Overall predictions are that there will be no significant noise impact generated during either the construction or operational phase of the proposed development site (inclusive of Plot 1 and Plot 2), in the context of existing traffic flows

21.4 Landscape & Visual Impact (Chapter 13)

Population

Generally, the visual effects of construction are perceived to be chaotic due to the haphazard nature of plant and machinery during these phases of work. While measures are taken during the process to limit the nuisance factor these effects still remain but are temporary in nature. It is considered that the overall interaction between the population and landscape and visual will be negative, moderate and short term during the construction phase.

The operational phases will result in a change in character of the site. With the removal of recreational facilities and open fields having a negative visual impact. The landscape measures proposed as part of the site development works will mitigate against the removal. As a result, it is anticipated that the interaction between the local population and landscape and visual will be neutral, moderate, and long term during the operational phase.

Biodiversity

The potential impacts on biodiversity are in relation to loss of habitat, due to the removal of some trees and hedgerows. However, the proposed development includes additional native hedge and tree planting and the retention and enhancement of trees and hedgerows where possible and practical. As a result, it is anticipated that the interactions between biodiversity and landscape and visual will be imperceptible, neutral, and long term under the construction and operational phases.

Cultural Heritage (Architecture and Archaeology)

There is some potential for minor interactions between the assessment of impacts on Cultural Heritage and impacts on Landscape and Visual. However, the assessment undertaken with respect to the proposed development does not result in a visual impact on the Heritage Assets within the

study area. It is anticipated, therefore, that the interaction between cultural heritage and landscape and visual will be imperceptible, neutral, and long term under the construction and operational phases.

21.5 Material Assets (Transport) (Chapter 14)

Population and Human Health

Traffic diversions during the Construction Stage could result in a temporary slight negative impact on population and human health. Diversions will be managed in accordance with the Construction Traffic Management Plan.

Biodiversity

Species using habitats in close proximity to the development sites may experience an increase in disturbance as a result of human activity, noise and vibrations generated during construction activities. Such risks will be mitigated in accordance with this EIAR.

Lands, Soil and Geology

Material excavated during the construction of the will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

Climate – Air Quality and Climate Change

The generation of traffic during the Construction Stage has the potential to impact on Air Quality. Air Quality will be controlled and monitored as set out in this EIAR.

Air – Noise and Vibration

The traffic generated during the Construction Stage has the potential to impact on noise and vibration. Both will be controlled and monitored as set out in this EIAR.

Material Assets - Waste

Excess material excavated during construction works for Luttrellstown Gate Phase 2 and St. Mochta's LRD will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

21.6 Material Assets (Waste) (Chapter 15)

Population and Human Health

The improper removal, handling and storage of hazardous waste could negatively impact on the health of construction workers. Potential impacts on population and human health are addressed in Chapter 5 of this EIAR.

Biodiversity

The improper handling and storage of waste during the construction and operational phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 6 of this EIAR (Biodiversity).

Land, Soils and Geology

Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the site. Potential impacts on land and soils are addressed in Chapter 7.

Traffic

The Proposed Development will require the removal of excavated soil and transportation to appropriate waste facilities during the construction phase. Potential impacts on traffic are addressed in Chapter 14 of this EIAR.

21.7 Material Assets (Utilities) (Chapter 16)**Population & Human Health**

The Construction phase will likely have a temporary impact on the existing settlement in the vicinity of the subject lands. There may also be some slight and temporary impacts to the existing population which may arise during the construction and operational phases. This risk will be mitigated in accordance with Chapter 5 of this EIAR.

LAND, SOILS AND GEOLOGY

There will be minor traffic disruption when excavation works are being carried out. Damage could be caused to existing services during excavation. This risk will be mitigated in accordance with Chapter 7 of this EIAR.

Air (Noise & Vibration)

Heavy machinery used for excavations to facilitate built services and infrastructure (gas, electricity, telecommunications etc.) may impact on noise and vibration. Both will be controlled and monitored as set out in Chapter 12 of this EIAR.

Waste Management

Excess soil excavated during construction works to facilitate built services and infrastructure (gas, electricity, telecommunications etc.), including any potential contaminated soils, will be managed and disposed of in approved locations as provided for in this EIAR.

Biodiversity

Species using habitats in close proximity to the development sites may experience an increase in disturbance as a result of human activity, noise and vibrations generated during construction activities. Such risks will be mitigated in accordance with Chapter 6 of this EIAR.

21.8 Cultural Heritage (Archaeological and Architectural) (Chapter 17)

No interactions of effects were identified in relation to cultural heritage.