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20

Inter-Related Effects

20.0 Inter-related Effects

20.1 Introduction

In an Environmental Impact Assessment Report (EIAR), the interactions between chapters are crucial for providing a comprehensive understanding of how different environmental factors influence each other.

Article 3 of the amended Directive states the following:

“The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

- a. population and human health;*
- b. biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- c. land, soil, water, air and climate;*
- d. material assets, cultural heritage and the landscape;*
- e. the interaction between the factors referred to in points (a) to (d).’.”*

The interactions between effects on different environmental factors have been considered throughout the individual assessment chapters as recommended in Section 3.7.6 of the EPA 2022 guidelines EPA EIA guidance (2022), which states:

“The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors. Close coordination and management within the EIA team is needed to ensure that interactions are adequately addressed throughout an EIAR”

All environmental factors are interlinked to a degree such that interrelationships exist on numerous levels. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions which can be influenced by the proposed development. As this EIAR has been prepared by a number of specialist consultants an important aspect of the EIA process is to ensure that interactions between the various disciplines have been taken into consideration.

Chapters 7 to 19 have described the potentially significant effects posed by the proposed development upon a variety of environmental receptors. Given the complexity of the proposed development, there is the potential for interaction amongst these impacts that may not be perceived when examined individually, hence, it is necessary to consider the relationships between the impacts.

Each environmental topic chapter of this EIAR includes a dedicated section on interactions with other relevant factors. This approach is considered to meet with the requirements of applicable EU and Irish law. The likely interactions between one topic and another have been discussed under each topic chapter by the relevant specialist consultant. Purser ensured collaboration among specialist consultants to address the likely interactions between effects predicted from the proposed development. This ensured that appropriate mitigation measures were incorporated into the design process.

Mitigation measures to minimise negative inter-related effects have been incorporated during the assessment process and are described in the individual assessment chapters where appropriate in each 'Mitigation and Monitoring' section. For example, the Biodiversity chapter takes into account the mitigation measures proposed in the Water chapter to reduce effects on water quality when considering the residual effects on sensitive aquatic receptors.

This section on interactions identifies the potential of unplanned but potential interactions that could occur during construction and operation of the proposed development. **Table 20.1** below identifies where it is predicated, that interactions could occur.

20.2 Methodology

The EPA's 2022 Guidelines provide further detail in terms of what information should be included in this Chapter, as follows:

"The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors. Close coordination and management within the EIA team is needed to ensure that interactions are adequately addressed throughout an EIAR. Further guidance on this important requirement is contained in section 4.3 Language, Terms and Editorial Notes.

It is general practice to include a matrix to show where interactions between effects on different factors have been addressed. This is usually done using the actual headings used in the EIAR (which may differ from the factors contained in the Directive (ref section 3.3.6). This is typically accompanied by text describing the interactions."

In keeping with the EPA's Guidelines an interactions matrix is provided in **Table 20.1** below which identifies the potential interactions between the various environmental factors assessed in this EIAR.

A summary overview of these interactions is then provided further below at **Table 20.2**, which provides a brief description of the interactions and an overview of the potential impacts that may occur between the various

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environmental topics as a direct or indirect result of the proposed project and any mitigation measures required to avoid, prevent, reduce or offset any potential significant effects on the environment.

Importantly, **Table 20.2** does not repeat the detailed analysis/assessment of the potential effects already set out in the respective specialist EIAR chapters.

20.3 Interactions Matrix

Source	Interaction	Receptor																									
		Pop & Human Health		Biodiversity		Land and Soils		Hydrology and Hydrogeology		Air Quality		Climate		Noise and Vibration		Traffic and Transportation		Material Assets: Waste		Material Assets: Utilities		Archaeology and Cultural Heritage		Landscape and Visual		Risk Management	
		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
Source	Population & Human Health			✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓						✓		✓
	Biodiversity	✓	✓			✓	✓	✓	✓															✓	✓		
	Land, Soils & Geology	✓	✓	✓	✓			✓		✓						✓								✓			
	Hydrology & Hydrogeology	✓	✓	✓		✓	✓											✓	✓								
	Air Quality	✓	✓	✓	✓	✓	✓					✓	✓			✓	✓										
	Climate							✓	✓	✓	✓					✓	✓	✓	✓								
	Noise and Vibration															✓	✓										
	Traffic and Transportation									✓	✓																
	Material Assets: Waste	✓	✓	✓	✓	✓	✓	✓	✓							✓	✓										
	Material Assets: Utilities					✓		✓	✓		✓		✓			✓	✓										
	Archaeology & Cultural Heritage																										
	Landscape and Visual		✓															✓	✓			✓					
	Risk Management	✓	✓			✓																					

Table 20.1: Interaction Matrix.

20.4 Overview of Interactions

As stated above, **Table 20.2** below, provides a summary overview of the anticipated interactions of each environmental factor with other environmental factors during the construction and/or operation stages of the proposed project. However, it is notes that **Table 20.2** does not provide an assessment of any likely significant impacts associated with the interactions identified.

Where the potential for impacts has been identified as a result of interactions with other environmental factors, these have been addressed comprehensively within the corresponding specialist EIAR chapter, and relevant mitigation/monitoring/reinstatement measures have been prescribed, where required, to ensure that any potential impacts will not be significant.

Environmental	Interactions
Population & Human Health – see Chapter 7	• Hydrology & Hydrogeology • Air Quality and Climate • Noise and Vibration • Traffic and Transportation • Material Assets – Waste • Material Assets - Utilities • Landscape and Visual Impact • Risk Management and Disasters
Biodiversity – see Chapter 8	• Population and Human Health • Land, Soils and Geology • Hydrology & Hydrogeology •
Land, Soils and Geology – see Chapter 9	• Population and Human Health • Biodiversity • Hydrology & Hydrogeology • Air Quality • Traffic and Transportation • Material Assets – Waste • Cultural Heritage and Archaeology • Landscape and Visual
Hydrology and Hydrogeology – see Chapter 10	• Population and Human Health • Biodiversity • Land, Soils and Geology • Material Assets
Air Quality (including Odour) – see Chapter 11	• Population and Human Health • Biodiversity

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	• Land, Soils and Geology • Traffic & Transportation • Climate • Biodiversity
Climate – see Chapter 12	• Hydrology and Hydrogeology • Air Quality • Traffic and Transportation • Waste
Noise and Vibration – see Chapter 13	• Population and Human Health • Biodiversity • Traffic & Transportation
Traffic and Transportation – see Chapter 14	• Population and Human Health • Air Quality • Climate • Noise and Vibration
Material Assets: Waste – see Chapter 15	• Population and Human Health • Biodiversity • Land, Soils and Geology • Hydrology and Hydrogeology • Traffic & Transportation
Material Assets: Utilities – see Chapter 16	• Land, Soils and Geology • Hydrology & Hydrogeology • Air Quality • Climate • Traffic and Transport
Archaeology and Cultural Heritage – see Chapter 17	• No interactions have been reported
Landscape and Visual – see Chapter 18	• Population and Human Health • Material Assets - Utilities • Cultural Heritage (including architectural and archaeological heritage)
Risk Management and Disasters – see Chapter 19	• Population and Human Health • Land, Soils and Geology

Table 20.2: Summary Overview of Anticipated Interactions. (Source: Purser).

20.4.1 Population and Human Health

Population and human health is an EIA topic which tends to interact with numerous other environmental topics addressed elsewhere in the EIAR. Where the potential for impacts on population and human health has been identified as a result of such interactions, these have been addressed comprehensively above. The noteworthy interactions with population and human health and other topics are summarised below. All of these interactions have been addressed above and, where feasible, appropriate mitigation measures have been prescribed in the corresponding specialist chapter.

Hydrology and Hydrogeology (Chapter 10)

Interactions between 'Population and Human Health' and 'Hydrology and Hydrogeology' have been considered in this EIAR as the proposed project has the potential to create impacts on surface water run-off during construction stage as a result of increased levels of silt or other pollutants in addition to potential pollution from spillages, wheel washing and water from trucks on site.

Air Quality (Chapter 11) and Climate (Chapter 12)

The assessment of the effects on Air Quality (including Odour) (**Chapter 11**) and Climate (**Chapter 12**) has established that the emissions to atmosphere during the construction and operational stages will not affect human health.

Air dispersion modelling was completed to evaluate the potential effects of the planned development regarding EU ambient air quality standards which were established on the protecting human health. As shown by the model results, projected ambient concentrations including background levels fall within all National and EU ambient air quality limit values and, thus, will have no effect on human health.

The predicted levels show that additional mitigation, other than the proposed Odour Treatment System, is not required.

Noise and Vibration (Chapter 13)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. The predicted impact will be negative, significant and short-term at the closest noise sensitive locations and will reduce to negative, not significant and short-term at receptors greater than 30m. During the operational phase there is no potential for significant nuisance and potential disturbance due to additional operational phase traffic. With appropriate mitigation measures in place, no significant impacts are predicted in relation to this interactions.

Traffic & Transportation (Chapter 14)

There is potential for impacts on population and human health during the construction phase due to negative impacts on journey characteristics due to additional (construction) traffic on road network and the potential for nuisance and disturbance due to construction traffic noise. With appropriate mitigation measures in place such as warning signage and designated haul route for HGVs the predicted impact will be negative, not significant, over the short term.

During the operational phase there is potential for negative impacts on population and human health due to the potential for delays on the road, the higher potential for accidents and additional traffic on road network during the operational phase.

Landscape & Visual (Chapter 18)

During the construction phase there is potential for interaction between population and human health and landscape and visual due to negative impacts due to presence of construction site and effects of construction activities (e.g. dust, dirt, stockpiling of soils, removal of vegetation, etc.). The predicted impact will be slight to moderate, negative and short-term.

The operational phase will result in positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The predicted impact will be neutral to beneficial, low to significant as the landscape (including replacement tree planting) matures and the views become more residential.

Material Assets- Waste (Chapter 15)

During the construction and operational phase there is potential for impacts on human beings in relation to the generation of waste and if wastes are not managed correctly and in accordance with the RWMP or the OWMP could result in fly-tipping, littering and reduced recycling, and re-use opportunities which could cause a nuisance to the public and attract vermin. The implementation of the RWMP and the OWMP, will ensure appropriate the impact of waste arisings are impacts on the local population and human health are neutral, imperceptible and long-term.

Material Assets- Utilities (Chapter 16)

In worst-case scenarios (e.g. where works are not carried out safely or in accordance with the applicable codes and standards), accidents during works (e.g. contact with live powerline or gas explosions) or water quality impacts resulting from works to utilities infrastructure, have the potential to result in human health impacts. Service outages resulting from works can temporarily affect the residential amenity of local residents and / or the operation of local businesses. 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 the specifications and guidelines of the relevant service providers. Therefore, the predicted impact no likely significant impact is envisaged with respect to population and human health during construction or operational phase.

Major Accidents and Disasters (Chapter 19)

The mitigation measures that will be put in place by the proposed development during the construction phase means the interaction between major accidents and disasters and human health are not significant. There are no expected impacts from these projects from a major accidents and disasters perspective, as such, there are no significant cumulative effects with the proposed development from a major accidents and disasters perspective.

20.4.2 Biodiversity

Interactions exist between this Biodiversity Chapter and those pertaining to Population and Human Health (Chapter 7), Land, Soils and Geology (Chapter 9), Hydrology and Hydrogeology (Chapter 10), and Landscape and Visual Impact (Chapter 18).

Population and Human Health (Chapter 7)

The potential impact of the proposed development on human health intersects with biodiversity considerations, particularly regarding dust and air quality management. An assessment of the potential impact of the proposed development on human health is included in Chapter 7 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.

Land, Soils and Geology (Chapter 9)

An assessment of the potential impacts of the proposed development on the existing land, soils and geological environment is set out in Chapter 9 Land, Soil and Geology of this EIAR. In terms of land, soils and geology, there is overlap with the biodiversity chapter in that the potential impacts of the construction works, through excavation, construction etc., have the potential to adversely affect the receiving environment; both geological and ecological. The mitigation measures outlined in both chapters exhibit a degree of overlap, as they are designed to safeguard the receiving environment from the potential impacts of construction and operational activities. This includes specific measures aimed at preventing pollution and sedimentation to any receiving waterbodies.

Hydrology and Hydrogeology (Chapter 10)

An assessment of the potential impacts of the proposed development on the hydrological and hydrogeological environment is detailed in Chapter 10 of this EIAR. In the absence of avoidance, remedial, and mitigation measures, construction activities may potentially create pathways for potential sources of contamination to enter

underlying groundwater. Construction activities will involve the use of potentially hazardous materials such as cementitious materials, fuels, oils, and other substances. An uncontrolled release of these materials, whether through containment failure or handling accidents, could have significant negative impacts on the surrounding environment.

The Cooleeny Stream (EPA code: 16C14) is linked to the Lower River Suir SAC, and so potential impacts to ecological receptors downstream of the Site are considered. The risk of the construction phase adversely affecting receiving waterbodies and local ecology is addressed through the proposed mitigation measures outlined in this chapter. There is notable overlap between the mitigation measures in both chapters, as they are designed to protect the receiving environment from the potential impacts of construction and operational activities. This includes specific measures aimed at preventing pollution and sedimentation to receiving waterbodies.

20.4.3 Land, Soils and Geology

Population and Human Health (Chapter 7)

An assessment of the potential effect of the Proposed Development on human health is included in **Chapter 7** of this volume.

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.

The geophysical survey undertaken for the site (Minerex, 2024) indicated the potential presence of karstified rock. In karst-prone areas, alterations in groundwater flow, exacerbated by additional water such as rainfall infiltration, can lead to increased rock erosion and the formation of voids. The design and specification for all buildings will be in accordance with current Building Regulations and therefore avoiding any potential risks associated with karst features.

Biodiversity (Chapter 8)

An assessment of the potential effects of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be effected a result of the excavation and importation of materials to the site are included in Chapter 8 of this volume. It also provides an assessment of the effects 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 effects.

Air Quality (Chapter 11)

The excavation of soils across the Site and the temporary stockpiling of soils pending reuse or removal offsite has the potential to generate nuisance effects (i.e., dust) during the Construction Phase of the Proposed Development.

The use of digestate will have a positive effect on the receiving lands given the improved recycling of nutrients and reduction of organic pollution / microbial contamination associated with untreated organic waste sources. Compared to other organic waste management practices, such as composting or direct land application of raw manure, digestate significantly reduces odour emissions. Composting can generate odours from volatile organic compounds (VOCs) and ammonia if not properly managed. Direct land application of raw manure can also lead to strong odours and potential environmental pollution. By stabilising organic waste and reducing pathogens, digestate not only minimises odour but it also enhances the nutrient profile of the digestate.

An assessment of the potential effect of the Proposed Development on air quality (including odours) is included in **Chapter 11** of this volume.

Landscape and Visual (Chapter 18)

During the construction phase and into the operational phase of the Proposed Development, the site landscape will undergo a change from undeveloped brownfield lands to industrial with associated landscaping. An assessment of the potential effect of the Proposed Development on the receiving landscape is included in Chapter 18 of this volume.

Traffic and Transport (Chapter 14), Waste (Chapter 15)

It is intended to retain and re-use the excavated soil and subsoil on the site for engineering fill and landscaping. However, where required, unsuitable material will require removal offsite. There is also a requirement to import aggregates during the construction phase of the Proposed Development. An assessment of the potential effect of the Proposed Development on Traffic and Transport and Material Assets (Waste) are included in **Chapter 14** and **Chapter 15** of this volume respectively.

20.4.4 Hydrology and Hydrogeology

The most significant interactions with hydrogeology and surface water is with land, soils & geology and population & human health. Due to the inter-relationship between groundwater and surface water the discussed impacts are considered applicable to Chapter 9 (Land, Soils and Geology).

Population and Human Health (Chapter 7)

No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development 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.

It is noted that specific issues relating to Public Health associated with the Proposed Development are set out in **Chapter 7** of this volume.

Land, Soils and Geology and Hydrogeology (Chapter 9)

An assessment of the potential effect of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in **Chapter 9** of this volume.

Biodiversity Chapter 8

An assessment of the potential effects of the Proposed Development on the Biodiversity of the Site, with emphasis on habitats, flora and fauna which may be effected a result of the Proposed Development are included in **Chapter 8** of this volume. It also provides an assessment of the effects 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 effects.

Material Assets – Utilities (Chapter 16)

An assessment of the potential effect on the Proposed Development on the material assets – Utilities including built services and infrastructure has been set out in **Chapter 16** of this volume. Potable water use will be in accordance with the volumes and rates set out in the Moyne Group Water Scheme Supply Agreement.

20.4.5 Air Quality (including Odour)

Population and Human Health (Chapter 7)

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health (Chapter 4 – Population & Human Health) and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place by the proposed development will ensure that the effects of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted effect is direct, short-term, negative and not significant with respect to population and human health during the construction phase and direct, long-term, negative and not significant during the operational phase, which is overall not significant in EIA terms.

Traffic and Transportation (Chapter 14)

Interactions between air quality and traffic (Chapter 14 - Traffic and Transportation) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The effects 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 effects of the interactions between traffic and air quality are considered to be direct, long-term, negative and imperceptible, which is overall not significant in EIA terms.

Climate (Chapter 12)

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 effects. Air quality modelling outputs are utilised within Chapter 12 - Climate. There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked.

Land, Soils and Geology (Chapter 9)

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, soils and geology (Chapter 9 - Land, Soils and Geology).

Biodiversity (Chapter 8)

There is the potential for interactions between air quality and biodiversity (Chapter 8 - Biodiversity). Dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially effect on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant effect on biodiversity. Once the mitigation measures outlined within Chapter 11 are implemented dust related effects are predicted to be direct, short-term, negative and not significant, which is overall not significant in EIA terms.

20.4.6 Climate

Hydrology and Hydrogeology (Chapter 10)

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 and ground water (Chapter 10 – Hydrology and Hydrogeology) 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 (Chapter 11)

Air quality (Chapter 11 – Air Quality (including Odour)) 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 (Chapter 14)

During the construction and operational phase, there is the potential for interactions between climate and traffic (for more information see Chapter 14 - Traffic and Transportation). Vehicles accessing the site will result in emissions of CO₂, a greenhouse gas. The effects 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 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.

Material Assets – Waste (Chapter 15)

Waste (Chapter 15 – Material Assets – 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.

20.4.7 Noise and Vibration

Traffic and Transport (Chapter 14)

Construction Phase: Construction vehicles on site and on local roads will generate little to no additional noise in the surrounding area, due to the marginal increase in traffic on the roads. There will be no quantifiable increase in noise levels from the additional construction traffic on the surrounding roads.

Operational Phase: There will be additional traffic once the development has reached the operational phase. These increase in road traffic noise levels from the additional traffic of the operational phase will be less than 1dB of an increase. This increase in road traffic noise will have no negative noise impact on the surrounding area.

Mitigation measures will not be required to reduce the noise impacts from the increased road traffic volumes during both the construction and operational phases of the development. This is due to the marginal increase in traffic volumes which equates to less than 1dB of an increase in road traffic noise levels in the surrounding area.

Noise and Vibration also interacts with Population and Human Health (Chapter 7) and Biodiversity (Chapter 8). Noise assessments consider sources such as transportation, industrial activities, and construction activities associated with the proposed development. They evaluate potential impacts on communities, wildlife, and sensitive receptors.

Suitable mitigation measures have been supplied in Chapter 13 to ensure that the sensitive receptors are not impacted. Further details are available in Chapter 13.

20.4.8 Traffic and Transportation

Transportation' and the following environmental factors have been considered in this EIAR as the proposed project has the potential to create impacts during both the construction and operational stages as a result of trip generation and traffic flow: Population and Human Health (Chapter 7), Air Quality (Chapter 11), Climate (Chapter 12) and Noise and Vibration (Chapter 13).

The proposed mitigation measures set out in Chapter 14 will ensure that there are minimum impacts on the factors listed above.

20.4.9 Material Assets: Waste

Population and Human Health (Chapter 7)

The improper removal, handling and storage of hazardous waste could result in a long term and negative effect on the health of construction workers however it is considered to be unlikely. Potential impacts on population and human health are addressed in Chapter 7.

Biodiversity (Chapter 8)

The improper handling and storage of waste during the construction and operational phases could result in a long term, slight and negative impact on biodiversity. Potential impacts and mitigation measures are outlined Chapter 8 (Biodiversity).

Land, Soils, Geology and Hydrogeology (Chapter 9 and Chapter 10)

Improper handling and improper segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the site and the contamination of water. This has the potential to result in long term, negative, moderate effects. Mitigation measures, potential impacts and residual effects are addressed in Chapter 9 and 10.

Traffic and Transportation (Chapter 14)

The delivery of feedstocks, removal of digestate and the removal of municipal waste from the Proposed Development has the potential to cause long-term, not significant, negative effects on the local traffic and transport. Potential impacts on traffic are addressed in Chapter 13.

20.4.10 Material Assets: Utilities

Land, Soils and Geology (Chapter 9)

Utilities and Lands, Soil and Geology are closely interrelated. During the duration of the project, excavations for utilities are designed to be balanced by means of cut/fill to ensure that there are no requirements for carting material off-site. A neutral impact is therefore assumed.

Hydrology and Hydrogeology (Chapter 10)

There is an inter-relationship between hydrology (addressed in Chapter 10) and utilities. There will be no potential cumulative impacts on the bedrock as excavations are relatively shallow with no large-scale dewatering required and the aquifer is poor with little importance regionally.

Surface water run-off may have limited potential to enter soil and groundwater. Implementation of appropriate mitigation measures as outlined in Chapter 10 (Hydrology) will eliminate the potential for the influx of surface contaminants into the underlying geology and hydrogeology.

Air Quality (Chapter 11)

The sitewide groundworks has been designed in such a way to minimise off site carting and subsequently lower the emissions produced by construction traffic. It is anticipated that the associated impact will be long-term, localised, neutral and imperceptible.

Climate (Chapter 12)

Climate change has the potential to increase flood risk over time. However, adequate attenuation and drainage have been provided to account for increased rainfall in future years, as part of the design of the proposed development, and it has been concluded that the associated impact will be long-term, localised, neutral and imperceptible.

Traffic and Transport (Chapter 14)

The construction of the proposed infrastructure related to utilities may impact traffic flow and transportation routes in the surrounding areas. The mitigation measures of these are summarised in Chapter 14.

20.4.11 Archaeology and Cultural Heritage

There are no interactions between Archaeology and Cultural Heritage and the other factors.

20.4.12 Landscape and Visual

Interactions in respect of the landscape and visual aspects of the proposed development relate to the architectural design of the proposed development and the landscape proposals for the site, as summarised in the design-related mitigation measures in Chapter 18 of the EIAR.

Population and Human Health (Chapter 7)

Changes to the visual environment may influence the perception and well-being of nearby residents. However, given the low sensitivity of the receiving landscape and minimal visual intrusion, no significant impacts on population or human health are anticipated.

Material Assets - Utilities (Chapter 16)

The project's visual effects may intersect with local infrastructure and facilities. However, the design and siting have minimized any visual prominence, so no significant effects on material assets are expected.

Cultural Heritage (Chapter 17)

The development is located within an area without significant cultural heritage designations, including architectural or archaeological heritage. Due to this and the mitigated visual presence of the project, interactions with cultural heritage are considered negligible.

20.4.13 Risk Management – Major Accidents and Disasters

Population and Human Health (Chapter 7)

The mitigation measures that will be put in place by the proposed development during the construction phase means the interaction between major accidents and disasters and human health are not significant.

There are potential interactions between major accidents and disasters and human health (Chapter 7 - Population & Human Health). The Land Use Planning assessment concluded that the level of individual risk to persons off-site is acceptable. Therefore, the effects of the interactions between major accidents and disasters and human health not significant.

Land, Soils and Geology (Chapter 9)

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between major accidents and disasters and land and soils in the form of subsidence and

landslides. The area surrounding the proposed development has a low susceptibility of landslides. Therefore, the likelihood of a landslide impacting the proposed development is negligible. It is predicted that there will be no significant interactions between major accidents and disasters and land, soils and geology (Chapter 9 – Land, Soils and Geology).

20.5 Summary

This Chapter confirms that the proposed project has the potential to create interactions between a number of the different environmental factors assessed within the EIAR. In accordance with the EPA's 2022 Guidelines, **Table 20.1** provides an interactions matrix which identifies the potential interactions between the various environmental factors assessed in this EIAR as a result of the construction and/or operation stages.

Table 20.2 provides a summary overview of the anticipated interactions of each environmental factor with other environmental factors during the construction and/or operation stages of the proposed project. However, it is noted that **Table 20.2** does not provide an assessment of any likely significant impacts associated with the interactions identified.

It is important to note that the authors of the specialist EIAR chapters have liaised with each other and relevant members of the design team, where necessary, to address any potential impacts arising as a result of interactions between one or more environmental factors.

Where the potential for impacts have been identified as a result of interactions with other environmental factors, these have been addressed comprehensively within the corresponding specialist EIAR chapter, and relevant mitigation/monitoring/reinstatement measures have been prescribed, where required, to ensure that any potential impacts will not be significant.

Please refer to the relevant specialist EIAR Chapters for further details on relevant potential interactions, impacts, mitigation measures and etc.