

SSE Tarbert Next Generation Power Station

Environmental Impact Assessment Report (EIAR)
Volume I
Chapter 20 Interactions

SSE Generation Ireland Limited

November 2023

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20. Interactions

20.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) describes the potential interaction of effects for which the Proposed Development, may have on the receiving environment and sensitive receptors. Details of contributors to EIAR chapters are provided in Appendix 1B, EIAR Volume II.

An evaluation of the interaction of effects is a requirement set out in Article 3 (1) of Directive 2011/92/EU of the European Parliament and the Council on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU (the 'EIA Directive'):

'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; and

(e) the interaction between the factors referred to in points (a) to (d).'

The likely direct and indirect significant effects of the Proposed Development in respect of the environmental factors, listed in Article 3(1) of the EIA Directive, have been assessed in detail in the respective chapters in this EIAR.

A summary of the interactions (or inter-relationship) of the likely direct and indirect significant effects of the Proposed Development between the following environmental aspects are outlined in this chapter:

- Air Quality.
- Cultural Heritage.
- Biodiversity.
- Landscape and Visual.
- Noise and Vibration.
- Water Environment.
- Land and Soils.
- Traffic and Transport.
- Population and Human Health.
- Material Assets.

- Climate.
- Waste Management.
- Major Accidents and Disasters (MA&Ds).

All potential effects arising from the interactions were identified early in the design process and in preparation of this EIAR. As a result, any potential effects were either avoided through design measures or have been addressed through specific mitigation and monitoring measures within the respective chapters of this EIAR. No additional mitigation or monitoring measures are proposed in this chapter.

Decommissioning phase effects will be less impactful on the environment than the construction phase. Therefore, it is considered that impact and subsequent effect identified for construction in this assessment will also be representative of potential impacts and effects during the decommissioning phase.

A full description of the existing site and conditions, and the description of the Proposed Development are provided within EIAR Chapters 4 and 5 respectively, and the Planning Statement submitted with this planning application.

A summary of the interaction of effects identified within this chapter is outlined in Table 20.1.

Table 20.1: Summary of Environmental Interactions

Environment Aspect / Interaction	Air Quality		Cultural Heritage		Biodiversity		Landscape & Visual		Noise & Vibration		Water Environment		Land & Soils		Traffic & Transport		Population & Human Health		Material Assets		Climate		Waste Management		Major Accidents & Disasters		
	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	
Air Quality																											
Cultural Heritage	✓	x																									
Biodiversity	✓	✓	x	x																							
Landscape & Visual	x	x	x	✓	x	x																					
Noise & Vibration	x	x	✓	x	✓	✓	x	x																			
Water	x	x	x	x	✓	✓	x	x	x	x																	
Land & Soils	✓	x	x	x	✓	x	x	x	✓	x	✓	✓															
Traffic & Transport	x	✓	✓	x	✓	x	✓	✓	✓	✓	✓	✓	✓	✓													
Population and Human Health	✓	x	x	x	x	x	x	x	✓	✓	x	x	✓	x	✓	x											
Material Assets	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x							
Climate	✓	✓	x	x	✓	✓	x	x	x	x	✓	✓	✓	x	✓	✓	✓	✓	✓	x	x						
Waste Management	x	x	x	x	✓	x	x	x	x	x	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	x	✓	✓			
Major Accidents & Disasters	x	✓	x	x	x	✓	x	x	x	x	x	✓	x	✓	✓	✓	✓	✓	✓	x	x	x	x	x	x		

Con:	Construction / Decommissioning Phase	✓ :	Weak / Some / Strong Interaction
Op:	Operation Phase	x :	No Interaction

20.2 Air Quality

Air quality interactions are summarised in the following paragraphs and in the relevant sections of this chapter: 20.2.1 Cultural Heritage, 20.2.2 Traffic and Transport, 20.2.3 Climate, 20.2.4 Major Accidents and Disasters. There are no interactions between air quality and the following environmental aspects: water environment; noise and vibration; material assets; landscape and visual; and waste management.

20.2.1 Cultural Heritage

Dust generated from construction and decommissioning phase activities may affect the setting of cultural heritage assets identified within a 1km radius of the Site based on the *Historic England Historic Environment Good Practice Advice in Planning: Note 3 (Second Edition) – The Setting of Heritage Assets* Guidelines.

Chapter 8 Cultural Heritage outlines the possibility of a negative effect to the settings of cultural heritage assets from dust during construction and decommissioning related traffic which has the potential to diminish the condition of the assets. However, this effect will be Short-Term and will cease once the construction or decommissioning phase is complete. During the construction phase, mitigation measures will be in place, as described in the Construction Environmental Management Plan (CEMP) (refer to Appendix 5A, EIAR Volume II), to ensure that heritage sites are protected during construction.

During the operational phase there will be no change to the effects assessed for the recorded cultural heritage assets within the study area due to presence of the Proposed Development.

20.2.2 Traffic and Transport

As outlined in Chapter 7 Air Quality (EIAR Volume I) assessment, it is predicted that the construction and decommissioning phases of the Proposed Development potential effects from vehicle emissions will be below the threshold number of vehicle movements that would trigger a requirement for air quality modelling, under the Transport Infrastructure Ireland (TII) construction screening criteria.

The Heavy-Duty Vehicle (HDV) and Annual Average Daily Traffic (AADT) construction vehicle movements will be below the relevant criteria. Construction traffic will access the Site along the existing public road network, therefore there will be no significant change in air quality from traffic during the construction or decommissioning phases. Therefore, consideration of vehicle effects has been screened out of the assessment.

During the operational phase, additional road traffic emissions will be limited to those associated with vehicle movements for plant maintenance and Hydrotreated Vegetable Oil (HVO) fuel deliveries of maximum 18 arrivals a day and up to 20 light duty vehicles (LDV) arrivals per day for workers.

The increase in traffic movements during the operational phase is not expected to generate additional emissions to the extent that it could contribute to a significant effect on local air quality. As such, the impact of operational road traffic emissions is not considered further in the air quality assessment. Overall, it is concluded that the effect from the traffic arising from the Proposed Development is Not Significant with respect to air quality.

20.2.3 Climate

Chapter 17 Climate outlines the assessment of the effects of the Proposed Development on climate change in respect of greenhouse gas (GHG) emissions and climate resilience. The assessment also considers the impact of climate change on the Proposed Development.

The interaction between climate and air quality is regarding GHG emissions from the Proposed Development and the impact of increased GHG emissions.

During the construction phase GHG emissions were assessed against construction activities such as: embodied carbon of construction products; embodied carbon associated with waste disposal and enabling works; and transport emissions. Construction is estimated to emit approximately 10,399 tonnes of GHG. However, emissions from the construction of the Proposed Development contribute considerably less than 1% of any carbon budget.

During the operational phase GHG emissions were assessed against the GHGs associated with operating and maintaining the Proposed Development, such as: operational emissions are based on a design life of 25 years; fuel and transportation. The total Lifecycle GHGs from operating the Proposed Development over its (at least) 25-year life are estimated to be 1,533,021 tonnes of CO₂ or equivalent. There will be an increase in GHG emissions as a result of the Proposed Development.

However, the Proposed Development will provide support to the electricity supply system at times when other sources of electricity generation are unable to meet grid demand, which will contribute to providing a secure energy supply to the national grid. It is reasonable therefore to view the Proposed Development not as an isolated, standalone piece of generating capacity but as an element within an interconnected system that will be part of a wider move to replace existing, unabated high-carbon electricity generation installations. The Proposed Development including the use of HVO complies with existing and emerging policy requirements and is fully in line with Ireland's trajectory towards low-carbon energy transition.

20.2.4 Major Accidents and Disasters

The construction phase will not result in any likely significant effects on air quality as a result of potential MA&Ds.

During the operational phase the assessment considers the substances present at the Proposed Development, identifying those which are potentially dangerous into the atmosphere. A release of pollutants may result in harm to the environment by discharging into atmosphere.

However, Chapter 19 MA&Ds (EIAR Volume I) identified that the design of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of accidents and disasters to an acceptable level.

20.2.5 Biodiversity

Air Quality and Biodiversity interactions are summarised in the biodiversity subsection 20.4.

20.2.6 Land and Soils

Air Quality and Land and Soils interactions are summarised in the land and soils subsection 20.8.

20.2.7 Population and Human Health

Air Quality and Population and Human Health interactions are summarised in the population and health subsection 20.10.

20.3 Cultural Heritage

Cultural heritage interactions are summarised in this paragraph and in the relevant sections of this chapter: 20.3.1 Landscape and Visual, 20.3.2 Traffic and Transport. There are no interactions between cultural heritage and the following environmental aspects; population and human health; biodiversity; land and soils; water environment; climate; material assets; waste management; and MA&Ds.

20.3.1 Landscape and Visual

Chapter 8 Cultural Heritage (EIAR Volume I) notes that cultural heritage assets are located both within a 1km and wider settings assessment area up to 5km from the Proposed Development.

The construction phase will not result in any likely significant effects on the existing landscape. The construction of the Proposed Development will tie into the industrial landscape character of the Site. Construction works will be Short-Term and Reversible. Therefore, there will be no likely significant effects on Cultural Heritage assets.

During the operational phase the Proposed Development will include a 55m high emissions stack which could create an impact upon the settings of the heritage assets, particularly Tarbert Lighthouse (RPS-KY-0891) and Light Keeper's House and Bastioned fort (KE003-001).

There is one asset, Kilkerin Fort (RPS 345) located at Lackyle North on a peninsula 2km to the north-east of the Site and will be visible too. It will, initially be partially screened by existing buildings, and blend into the overall existing industrial landscape of the SSE Tarbert site. The change to setting will be such that the special interests or qualities of Kilkerin Fort (RPS 345) will have a Low impact.

20.3.2 Traffic and Transport

The cultural heritage impact assessment considers all recorded cultural heritage assets within the study area.

During the construction phase there is the potential to impact cultural heritage assets from the dust, noise and vibration associated with construction traffic. However, the additional traffic during construction will be temporary. The possibility of adverse effects to cultural heritage assets from construction traffic related to dust, noise and vibration, will be Short-Term and Slight. The mitigation measures in the CEMP will ensure that any cultural heritage assets are protected during construction (refer to Appendix 5A, EIAR Volume II.)

During the operational phase, traffic impacts associated with the Proposed Development will be Low and will have a Negligible effect on cultural heritage assets.

20.3.3 Noise and Vibration

Cultural Heritage and Noise and Vibration interactions are summarised in Section 20.6.

20.4 Biodiversity

Biodiversity interactions are summarised in the following paragraphs and in the relevant sections of this chapter: 20.4.1 Air Quality, 20.4.2 Noise and Vibration, 20.4.3 Water Environment, 20.4.4 Land and Soils, 20.4.5 Traffic and Transport, 20.4.6 Climate, 20.4.7 Waste Management and 20.4.8 Major Accidents and Disasters. There are no interactions between biodiversity and the following environmental aspects: landscape and visual; population and human health; material assets; and cultural heritage.

20.4.1 Air Quality

In accordance with the 'Guidance on the Assessment of Dust from Demolition and Construction Activities' published by the Institute of Air Quality Management (IAQM) (2023), the screening criteria for ecological receptors is 50m from the boundary of the Site. The trackout distance is 50m from construction traffic routes and up to 500m from the construction site entrance(s).

Fifteen sensitive nature conservation site receptors have been selected to adequately represent various habitats across the Lower River Shannon Special Areas of Conservation (SAC) and sections of the River Shannon and River Fergus Estuaries Special Protection Area (SPA), within 15km of the Proposed Development.

During the construction phase the air quality assessment determined that there will be Negligible effect on biodiversity.

During the operational phase, the numbers of vehicles will be below that of the construction phase, therefore, an operational phase assessment has been screened out.

The impact of airborne pollution emissions during the operational phase was assessed. With respect to the Appropriate Assessment (AA) / Natura Impact Statement (NIS) (submitted with this EIAR and application), a total of 15 No. modelling points were selected to provide predictions for airborne pollution at habitat locations within the European sites that are within 15km of the Proposed Development (*i.e.*, Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA). The air quality modelling determined that airborne pollution will not result in any Adverse effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA or any other ecological receptors.

20.4.2 Noise and Vibration

Protected / notable species within the study area were assessed for their potential to be affected by noise and vibration during the construction, operational and decommissioning phases.

Acoustic modelling was also carried out to predict the noise levels which could be generated at various receptor locations due to construction, operational and decommissioning activities.

A total of three noise modelling locations were selected to inform the AA / NIS (submitted with this application). The locations of these points were selected with cognisance of the potential distribution of special conservation interest (SCI) species both within and outside of the boundary of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, and to consider distribution of SCI birds within the Site based on the results of the non-breeding bird surveys.

Full details of the noise modelling are provided in Chapter 11 Noise and Vibration (EIAR Volume I). Although noise levels will be elevated during construction works in habitats within the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, the noise levels will quickly be within the range at which waterbirds are expected to become habituated, this is explained in further detail in the NIS (refer to Appendix 9B, EIAR Volume II). Should disturbance of waterbirds occur, displacement is therefore only likely from the area immediately around the Proposed Development. This has no potential to prevent the Conservation Objectives of the SAC and SPA being met, namely there will be no material change to the distribution of SCI species, nor any impact on the population trends of these species. With the inclusion of the mitigation measures outlined in the AA / NIS, any disturbance levels will be decreased even further than the levels outlined above, thus making an adverse effect on Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA even more unlikely.

The predicted noise levels during the operational phase determined that the disturbance of waterbirds is very unlikely. Noise generated during the operational phase will be constant (when in use), and it is highly likely that birds will become habituated to these noise levels (as is the case with the existing Tarbert HFO Power Station) (refer to the NIS, Appendix 9B, EIAR Volume II). There is not expected to be any disturbance on birds using this area for these reasons and with the addition of mitigation detailed in the NIS.

Similarly, Chapter 9 Biodiversity, concluded that there will be Negligible effects on bats, badger, otter and breeding birds.

20.4.3 Water Environment

In the absence of control measures any impacts to surface water features, during the construction and operational phases, may in turn impact the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, given their proximity to the Site.

Chapter 12 Water Environment (EIAR Volume I) sets out the mitigation measures with respect to the protection of surface water features from accidental spills and leaks, sedimentation and the use of concrete and lime during the construction, operational and decommissioning phases.

With the implementation of the mitigation measures outlined in this EIAR and NIS, there will be no significant adverse effects on surface water features or biodiversity as a result of the Proposed Development.

20.4.4 Land and Soils

During the construction phase there will be a minor loss of habitat (recolonising bare ground) to facilitate the construction of the Proposed Development. There may also be a minor loss of small areas of grassy verges to facilitate the construction works. There will no loss of treelines or scrub. The recolonising bare ground is of relatively low quality and therefore any loss of this habitat type is considered Not Significant.

During the construction phase there is the potential for accidental spills and leaks, sedimentation and the use of concrete and lime which could potentially impact soils and groundwater underlying the Site and biodiversity habitats.

However, mitigation measures with respect to the protection of land from accidental spills and leaks are set out in Chapter 13 Land and Soils and the CEMP (refer to Appendix 5A). The lands and soils assessment determined that there will be no likely significant effects on biodiversity or habitats as a result of the Proposed Development.

During the operational phase, there will be no likely significant effects on biodiversity as a result of the Proposed Development

20.4.5 Traffic and Transport

During the construction phase there is potential for noise and airborne / dust pollution impacts generated by construction traffic on a range of ecological features e.g., the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA and habitats / species within the Site which are outlined in Chapter 9 Biodiversity. However, construction activities associated with the Proposed Development are unlikely to generate substantial quantities of dust. Moreover, mitigation measures will be implemented to minimise dust generation, as outlined in CEMP, Appendix 5A, EIAR Volume II.

During the construction and operational phases, traffic associated with the Proposed Development has the potential to result in negative effects on biodiversity, potentially resulting in severance, disturbance and mortality impacts. However, the existing Tarbert HFO Power Station has operational traffic on-site, which all species are habituated to.

Therefore, there will be no likely significant effects as a result of traffic and transport on biodiversity.

20.4.6 Climate

Chapter 17 Climate outlines the assessment of effects of the Proposed Development on climate in respect of GHG emissions and climate change resilience (CCR). The assessment also considers the impact of climate change on the Proposed Development.

The potential risks to biodiversity may be exacerbated by climate change during the construction and operational phases mostly by exposure to climate change risk. Climate change risk includes coastal flooding due to the proximity of the Proposed Development to the coast and the sea level rise projections based on climate change effects.

However, embedded mitigation measures for the Proposed Development will result in No Significant effects in relation to combined impacts to biodiversity.

20.4.7 Waste Management

In the absence of control measures demolition and construction (C&D) waste arisings, including hazardous waste, may in turn impact biodiversity and the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA given their proximity to the Site.

During the construction phase there is the potential for C&D waste to impact the local environment and watercourses if the waste is not management and stored correctly. During construction hazardous waste arisings will occur, but are expected to comprise small quantities of oils, chemicals and similar materials typically used as part of construction activities.

Mitigation measures for C&D waste management are set out in Chapter 18 Waste Management, the CEMP and the Resource and Waste Management Plan (RWMP) (refer to Appendix 5A and 18A respectively).

During the operational phase the Proposed Development will generate small quantities of waste from the offices, including paper and packaging. Small quantities of oils and chemicals will also be required on-site (including lubrication oils, propane, ammonia, general oils, canisters from gases stored on-site). However, the operational phase waste is considered Not Significant.

With these mitigation measures in place there will be no likely significant effect on biodiversity from C&D waste materials.

20.4.8 Major Accidents and Disasters

The assessment considers the substances present at the Site, identifying those which are potentially dangerous, such as flammable materials and substances toxic to human health and / or the environment. A release of pollutants, for example, contaminated firewater, may result in harm to the environment by discharging into Shannon Estuary SAC and River Shannon and River Fergus Estuaries SPA or surrounding land.

However, Chapter 19 MA&Ds (EIAR Volume I) identified that the design and operations of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of accidents and disasters to an acceptable level.

As such, it is concluded that these events are very unlikely to occur and therefore there are no expected positive or negative interacting effects between MA&Ds and environmental receptors such as biodiversity and water.

20.5 Landscape and Visual

Landscape and visual interactions are summarised below and in the relevant sections of this chapter: 20.5.1 Traffic and Transport. There are no interactions between landscape and visual and the following environmental aspects; biodiversity; population and human health; land and soils; water environment; air quality; climate; noise and vibration; material assets; waste; and MA&Ds.

20.5.1 Traffic and Transport

During the construction phase road closures, potential traffic management, and signage have the potential to have an effect upon the local landscape and views towards the Site. Machinery and material movements related to excavations and earthworks will result in temporary landscape and visual effects within the study area during the construction phase. However, visibility diminishes quickly with distance from the Site due to intervening, compound boundaries, vegetation, topography and / or existing structures on the Site. The construction phase will not result in any likely significant effects on the existing landscape.

During the operational phase, traffic volumes will be low and there will be Negligible effects on the landscape and visual elements of the Proposed Development study area.

20.6 Noise and Vibration

Noise and vibration interactions are summarised below and in the relevant sections of this chapter: 20.6.1 Cultural Heritage and 20.6.2 Traffic and Transport. There are no interactions between noise and vibration and the following environmental aspects; water environment; air quality; climate; material assets; landscape and visual; waste management and MA&Ds.

20.6.1 Cultural Heritage

Chapter 8 Cultural Heritage notes that heritage assets are located within 1km of the Proposed Development. There is the potential for negative effects to the setting of these assets from construction phase noise and vibration, as a result of traffic and on-site construction activities which could potentially diminish the importance of these assets.

However, the construction phase impact will be Short-Term and will cease once construction is complete. During the construction phase, mitigation measures will be in place, as described in the CEMP (refer to Appendix 5A, EIAR Volume II), to ensure that the heritage sites are protected.

During the operational phase there will be no change to the effects assessed for the designated assets within the study area due to the permanent presence of the Proposed Development.

20.6.2 Traffic and Transport

Chapter 14, Traffic and Transport, determines that the construction traffic will travel to and from the Site via the N69 and N67 National roads. The transport assessment finds that construction traffic will lead to an increase in the number of vehicles using the N69 and N67 roads. However, the assessment determined that there will be no likely significant effect on existing road traffic noise levels during the construction phase. The calculated increases in levels are defined as Imperceptible and Temporary. A Construction Traffic Management Plan (CTMP) has been prepared as part of the EIAR, refer to Appendix 14B, Volume II.

During the operational phase, there will be a high degree of automation with the Proposed Development. The Proposed Development will be controlled centrally from the proposed administration building on the SSE Tarbert site, therefore the traffic associated with operational personnel and fuel deliveries will be Not Significant. There will be a small increase in the number of personnel accessing the Site for routine maintenance / overhaul. Overall, during the operational phase traffic impacts have been assessed as Negligible.

The impacts of operational traffic during the operational phase of the Proposed Development, are defined as Not Significant.

20.6.3 Land and Soils

Noise and Vibrations and Land and Soils interactions are summarised in Section 20.8.

20.6.4 Population and Human Health

Noise and Vibrations and Population and Human Health interactions are summarised in Section 20.10.

20.7 Water Environment

Water interactions are summarised in the following paragraphs and in the relevant sections of this chapter: 20.7.1 Traffic and Transport, 20.7.2 Climate, 20.7.3 Waste Management and 20.7.4 Major Accidents and Disasters. There are no interactions between water and the following environmental aspects; population and human health; air quality; noise and vibration; material assets; cultural heritage; and landscape and visual.

20.7.1 Traffic and Transport

During the construction phase, there is the potential for accidental spillage or leakage of oils and fuels from construction machinery or site vehicles. This has the potential to impact on water and groundwater underlying the Site if inappropriately handled or stored.

A CTMP and CEMP (refer to Appendix 14B and Appendix 5A respectively, EIAR Volume II) have been prepared as part of this planning application, to mitigate negative impacts on the environment during the construction phase.

Similarly, during the operational phase there is the potential for accidental spills and leaks to occur from vehicles accessing the Site. Potential contaminants could migrate through the subsoils and impact water and underlying groundwater.

Mitigation measures are outlined in Chapter 9 Biodiversity, Chapter 13 Land and Soils and Chapter 12 Water Environment, in addition to control measures that have been included in the design. These mitigation measures will minimise the potential for any adverse effects to creating water pollution during the construction, operational and decommissioning phases.

20.7.2 Climate

Chapter 17 Climate outlines the assessment of the effects of the Proposed Development on climate in respect of GHG emissions and climate change resilience (CCR). The assessment also considers the impact of climate change on the Proposed Development.

There is a potential interaction between water and climate with regard to flooding, based on a future climate change scenario. The Proposed Development falls within Flood Zone A for tidal / coastal flooding, meaning there is a high probability of coastal flood events within the Site boundary. A Site-Specific Flood Risk Assessment (FRA) has been undertaken and the impact of the Proposed Development, taking into account the climate change scenario (refer to Appendix 12A, EIAR Volume II). The FRA has recommended a flood defence scheme of +4.8mAOD to adequately protect the Site.

20.7.3 Waste Management

Waste has the potential to impact waterbodies if waste is incorrectly stored or managed and from the excavation and reuse / disposal of shallow made ground and soils. In the absence of control measures construction waste arisings including hazardous wastes may in turn impact waterbodies.

Uncontained spillage of wastewater effluent and / or runoff from chemical and waste storage or handling areas has the potential to impact the water environment during the construction phase.

Mitigation measures with respect to the protection from accidental spills and leaks, sedimentation and the use of concrete and lime are set out in Chapter 13 Land and Soils, Chapter 18 Waste Management, the CEMP and the RWMP (refer to Appendix 5A and 18A respectively, EIAR Volume II).

During the operational phase, HVO will be delivered to the Site and oils and chemicals will be stored on the Site, necessary for the operation of Proposed Development. Such oils and chemicals may result in small quantities of operational waste. The process wastewater from the production of demineralised water will contain the naturally occurring minerals removed from the mains water. Wastewater will be treated to adjust the pH to neutral range before discharge to the surface water drainage system, and ultimately to sampling point SE3 / outfall 8 and 9. Wastewater will also be generated from blade washing but will be collected and stored in a dedicated drain tank on-site and will periodically be disposed offsite by a road tanker in compliance with the Waste Management Act 1996. Operational waste impacts from the Proposed Development are expected to be Negligible and will be confined to occasional disposal, maintenance, and repair.

20.7.4 Major Accidents and Disasters

During the operational phase, the MA&Ds assessment considers the substances present at the Site, identifying those which are potentially dangerous, such as flammable materials and substances toxic to human health and / or the environment. A release of pollutants, for example, contaminated firewater, may result in harm to the environment by discharging into the River Shannon estuary or surrounding environment.

However, Chapter 19 MA&Ds (EIAR Volume I) identified that the design of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of accidents and disasters to an acceptable level.

As such, these events are very unlikely to occur and therefore there are no expected positive or negative interacting effects between MA&Ds and environmental receptors such water and groundwater.

20.7.5 Land and Soils

Water and Land and Soils interactions are summarised in Section 20.8.

20.8 Land and Soils

Land and Soils interactions are summarised below and in the relevant sections of this chapter: 20.8.1 Air Quality, 20.8.2 Noise and Vibration, 20.8.3 Water Environment, 20.8.4 Traffic and Transport, 20.8.5 Climate, 20.8.6 Waste Management and 20.8.7 Major Accidents and Disasters. There are no interactions between land and soils and the following environmental aspects; material assets; cultural heritage; and landscape and visual.

20.8.1 Air Quality

During the construction phase, excavation, earthworks, temporary stockpiling of soil will be carried out during the works. Stockpiles have the potential to cause negative impacts on local air quality.

Dust suppression measures (e.g., damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance

dust and dirt on roads. Mitigation measures are also outlined in Chapter 7 Air Quality and the CEMP, refer Appendix 5A, EIAR Volume II. However, a low risk of dust impacts was identified due to the potential dust emission magnitude and the sensitivity of the area.

During the operational phase, no impacts to land and soils are anticipated.

20.8.2 Noise and Vibration

During the construction phase, excavation, earthworks, and temporary stockpiling of soil will be carried out. Construction phase activities, including the movement of materials on-site can result in noise and vibration impacts to sensitive receptors surrounding the Site. Mitigation measures are outlined in Chapter 11 Noise and Vibration and the CEMP (refer to Appendix 5A). However, No Significant Adverse effects are expected at sensitive receptors.

During the operational phase, no impacts to land and soils are anticipated.

20.8.3 Water Environment

During the construction phase, excavation, earthworks, and temporary stockpiling of soil will be carried out. These activities have the potential to release sediment into the catchment area and cause negative impacts on water quality. It is anticipated that low levels of stockpiling will occur as the bulk of the material will be excavated either straight into trucks for transport offsite or reused in other areas around the Site.

Excavation and infilling impacts will result in a permanent negative effect. This is considered to be a Medium effect on a soil and groundwater environment. During the operational phase, process wastewater and wastewater will be generated. The process wastewater will be discharged to the surface water drainage system.

During the operational phase, there is also the potential for an increase in the volume and rate of surface water run-off from new impervious areas, leading to an impact on flood risk, upstream and downstream of the Site. Impacts on receiving waterbodies from anthropogenic pollutants in surface water run-off (including accidental distillate fuel spillages from tanks and pipelines) are considered a direct negative impact, but unlikely to occur with the embedded mitigation measures, including bunding of fuel tanks and inclusion of interceptors within the drainage system.

Mitigation measures with regard to the protection of soil, groundwater and surface water quality during both the construction and operational phases are outlined in Chapter 12 Water Environment and will be applicable to Chapter 13 Land and Soils.

The implementation of mitigation measures will significantly reduce the likelihood and magnitude of the potential impacts on the water environment during the construction, operational and decommissioning phases.

20.8.4 Traffic and Transport

During the construction phase, there is the potential for accidental spillage or leakage of oils and fuels from construction machinery or vehicles. This has the potential to impact on soils and groundwater underlying the Site if inappropriately handled or stored.

A CTMP and CEMP (refer to Appendix 14B and 5A respectively, EIAR Volume II) have been prepared as part of this planning application to mitigate negative impacts on the environment during the construction phase.

Similarly, during the operational phase there is the potential for accidental spills and leaks to occur from vehicles accessing the Site. Potential contaminants could migrate through the subsoils and impact underlying groundwater.

During the operational phase, the Proposed Development will run on HVO. The HVO will be delivered to Site by road in HDV tankers. Deliveries of HVO will be by road and will be stored on-site in proposed tanks before being pumped to its operating destination within the Site.

Mitigation measures will significantly reduce the likelihood and magnitude of the potential impacts on the water environment during the construction, operational and decommissioning phases. The magnitude of impact relating to the accidental pollution by spillages is considered likely to decrease from Slight Adverse to Negligible.

The implementation of mitigation measures will significantly reduce the likelihood and magnitude of the potential impacts on the land and soils during the construction, operational and decommissioning phases.

20.8.5 Climate

Chapter 17 Climate outlines the assessment of the effects of the Proposed Development on climate change in respect of greenhouse gas emissions and climate resilience. The assessment also considers the impact of climate change on the Proposed Development.

There will be unavoidable GHG emissions resulting from the construction phase and operational phase of the Proposed Development. However, embedded mitigation measures for the Proposed Development means that there are not predicted to be any significant effects in relation to land and soils.

20.8.6 Waste Management

Waste has the potential to impact soils and groundwater if waste is incorrectly stored or managed and with regard to the excavation and reuse / disposal of shallow made ground and soils. In the absence of control measures construction waste arisings including hazardous wastes may in turn impact on soils and groundwater.

Uncontained spillage of wastewater effluent and / or runoff from chemical and waste storage or handling areas impacting on soils and groundwater during the construction phase.

Mitigation measures with respect to the protection from accidental spills and leaks, sedimentation and the use of concrete and lime are set out in Chapter 13 Land and Soils, Chapter 18 Waste Management and the CEMP and the RWMP (refer to Appendix 5A and 18A respectively, EIAR Volume II).

During the operational phase HVO will be delivered to the Site and oils and chemicals will be stored on-site, necessary for the operation of Proposed Development. Such oils and chemicals may result in small quantities of operational waste. However, operational waste impacts from the Proposed Development are expected to be Negligible.

Mitigation measures will significantly reduce the likelihood and magnitude of the potential impacts on land and soils during the construction, operational and decommissioning phases. The magnitude of impact relating to the accidental pollution by spillages is considered likely to decrease from Slight Adverse to Negligible.

20.8.7 Major Accidents and Disasters

During the operational phase, the MA&Ds assessment considers the substances present at the Site, identifying those which are potentially dangerous, such as flammable materials and substances toxic to human health and / or the environment. A release of pollutants could result in harm to the environment by discharging into the River Shannon estuary or surrounding environment.

However, Chapter 19 MA&Ds (EIAR Volume I) identified that the design of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of accidents and disasters to an acceptable level.

As such, these events are very unlikely to occur and therefore there are no expected positive or negative interacting effects between MA&Ds and environmental receptors such as land, soils and groundwater.

20.8.8 Population and Human Health

Land and Soils and Population and Human Health interactions are summarised in Section 20.10.

20.9 Traffic and Transport

Traffic and transport interactions are summarised below and in the relevant sections of this chapter: 20.9.1 Waste Management and 20.9.2 Major Accidents and Disasters. There are no interactions between traffic and transport and the following environmental aspect: material assets.

20.9.1 Waste Management

During the design process, every effort has been made to balance the import and export volumes of materials thereby minimising construction traffic generation in the first instance. The interaction between traffic and transport and waste is associated with the disposal of waste.

A CTMP, CEMP and RWMP (Appendix 14B, 5A and 18A respectively, EIAR Volume II) have been prepared to mitigate negative impacts on the environment during the construction phase. As a result of the implementation of mitigation, significant residual impacts from material imports and exports on construction traffic will not arise.

During the operational phase, HVO will be delivered to the Site as well as other oils and chemicals necessary for the operation of Proposed Development. Such chemicals may result in small quantities of operational waste. Similarly, the operational phase will generate small quantities of waste from the offices, including paper and packaging. However, operational waste impacts from the Proposed Development are expected to be Negligible.

20.9.2 Major Accidents and Disasters

Due to the nature and size of the Proposed Development there is a risk of an abnormal or heavy load falling from its transport vehicle onto the road network in the event of a collision or crash. The CTMP

(Appendix 14B, EIAR Volume II) predicts that all construction traffic associated with the Proposed Development (heavy haul, general delivery and site operatives) will arrive via the N67 and N69.

During the operational phase, the MA&Ds assessment considers the substances present at the Site, identifying those which are potentially dangerous. HVO will be delivered to the Site by road in HDV tankers. During the operational phase, there will be limited vehicle movements associated with the supply of HVO for the Proposed Development. The traffic and transport assessment has determined that the operational traffic volumes will be Not Significant.

As such, these events are very unlikely to occur also due to the mitigation measures in place and therefore there are Negligible expected positive or negative interacting effects between MA&Ds and environmental receptors such traffic and transport.

20.9.3 Population and Human Health

Traffic and Transport and Population and Human Health interactions are summarised in Section 20.10.

20.9.4 Climate

Traffic and Transport and Climate interactions are summarised in Section 20.12.

20.10 Population and Human Health

Population and human health interactions are summarised in the following section and in the relevant sections of this chapter: 20.10.1 Air Quality, 20.10.2 Noise and Vibration, 20.10.3 Land and Soils, 20.10.4 Traffic and Transport, 20.10.5 Climate, 20.10.6 Waste Management and 20.10.7 Major Accidents and Disasters. There are no interactions between population and human health and the following environmental aspects; biodiversity; water; material assets; cultural heritage; and landscape and visual.

20.10.1 Air Quality

Construction phase activities and traffic may result in temporary air quality and neighbourhood amenity effects. Pollution caused by traffic has the potential to cause negative impacts on local air quality, if not mitigated. However, the risk of dust impacts occurring during construction is assessed to be a low risk to human health, due to the limited number of receptors near dust sources. Mitigation measures are outlined in Chapter 7 Air Quality and the CEMP (Appendix 5A, EIAR Volume II). With these mitigation measures in place there will be no likely significant effect on human health from construction phase dust.

During the operational phase, it is expected that the Proposed Development will not result in any significant changes to the local air quality. During the operational phase the traffic impacts associated with the Proposed Development will Not be Significant.

20.10.2 Noise and Vibration

Construction phase activities have the potential to result in temporary noise and vibration impacts on receptors within the vicinity of the Site. However, the noise and vibration assessment has determined that there will be No Significant Adverse effects at residential receptors provided mitigation measures are implemented.

An assessment of noise generation caused by construction traffic was carried out. The assessment predicts that there will be No Significant effects due to the presence of construction phase traffic.

An assessment of noise generation caused by the operations of the Proposed Development was carried out. The assessment concluded that two NSR will be compliant, and the effects are considered Not Significant. However, there will be a night-time noise criterion exceedance at one NSR. Mitigation measures will be implemented to reduce any impacts on the nearby receptors. Post mitigation, No Significant residual impacts are expected.

20.10.3 Land and Soils

The quality of the local environment can have a significant impact on the physical and mental health of the local population.

During the construction phase, excavation, earthworks, and temporary stockpiling of soil will be required. Stockpiles have the potential to cause negative impacts on air and water quality. However, a CEMP has been prepared (Appendix 5A, EIAR Volume II), to ensure that there will be no impacts on any vector that would pose a risk to human health.

During the operational phase no impacts to population and human health are anticipated.

20.10.4 Traffic and Transport

The study area of the Proposed Development is predominantly rural with limited public transport available. Local residents rely heavily on the local and regional road network. During the construction phase, HDV traffic, general delivery traffic and site operatives will all be required to travel to and from the Site. The construction phase is predicted to last up to 29 months.

The construction traffic will travel to and from the Site via the N67 and N69. The traffic assessment has concluded that the N67 and N69 can adequately facilitate construction traffic accessing the Site. The potential impact of construction traffic will be Temporary.

The transport assessment notes that construction traffic will lead to an increase in the number of vehicles using these two roads. The assessment concludes that the construction traffic congestion will not be considerable enough to deter local residents from accessing workplaces, educational facilities, or community facilities. A CTMP has been prepared as part as this planning application, refer to Appendix 14B, EIAR Volume II.

During the operational phase, the Proposed Development will not have a likely significant effect on the local residents in the community, due to the estimated low volume of operational traffic associated with the Proposed Development.

20.10.5 Climate

Chapter 17 Climate outlines the assessment of the effects of the Proposed Development on climate change in respect of GHG emissions and climate resilience. The assessment also considers the impact of climate change on the Proposed Development.

During the construction phase GHG emissions were assessed against construction activities such as: embodied carbon of construction products; embodied carbon associated with waste disposal and

enabling works; and transport emissions. Construction is estimated to emit approximately 10,399 tonnes of GHG. The impact of the Proposed Development in terms of climate change as a determinant of human health and well-being during construction is assessed to be Negative (-).

During the operational phase GHG emissions were assessed against the GHGs associated with operating and maintaining the Proposed Development, such as: operational emissions are based on a design life of 25 years; fuel and transportation. The total Lifecycle GHGs from operating the Proposed Development over its (at least) 25-year life are estimated to be 1,533,021 tonnes of CO₂ or equivalent. There will be an increase in GHG emissions as a result of the Proposed Development.

The impact of the Proposed Development in terms of climate change as a determinant of human health and well-being during operation is assessed to be Negative (-), however Not Significant when considering the ability of Ireland to achieve its stated net zero pathway.

20.10.6 Waste Management

Waste has the potential to effect human health, if incorrectly stored or managed. In addition, incorrect management of waste can result in littering that can cause a nuisance to the public and attract vermin.

A RWMP (Appendix 18A, EIAR Volume II), will ensure appropriate management of waste and avoid any significant adverse effects on the local population during the construction phase.

During the operational phase oils and chemicals will be necessary for the operation of Proposed Development. Such oils and chemicals may result in small quantities of operational waste. However, operational waste impacts from the Proposed Development are expected to be Not Significant.

20.10.7 Major Accidents and Disasters

Construction activities include works required to connect electrical power generated at high voltage (HV) at the Proposed Development to the transmission system via equipment such as transformers and switchgear. There are hazards associated with HV electricity, particularly during construction when work is carried out at or near to overhead power lines and underground cables. Contact with HV electricity can cause fatal injuries therefore must be carefully managed to control risks. An accident which causes an interruption to the supply of electricity to local residents and businesses could be within the criteria for a MA&Ds event.

A comprehensive Health & Safety (H&S) programme will be implemented to minimise any risks to and ensure the health and safety of construction personnel, site visitors and any local residents. The Proposed Development will comply with all H&S Regulations during the construction phase.

During the operational phase, the assessment considers the substances present at the Proposed Development, identifying those which are potentially dangerous, such as flammable materials and substances toxic to human health and / or the environment. A Site Emergency Response Plan (ERP) will be developed in relation to the Proposed Development in accordance with legislative requirements including COMAH and IE Licence, which will include a fire strategy and appropriate training procedures.

Chapter 19 MA&Ds identified that the design of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of accidents and disasters to an

acceptable level. As such, these events are very unlikely to occur and therefore there are no expected positive or negative interacting effects between MA&Ds and human / environmental receptors.

20.11 Material Assets

There are no Material Assets interactions with the other environmental effects.

20.12 Climate

Climate interactions are summarised below and in the relevant sections of this chapter: 20.12.1 Traffic and Transport and 20.12.2 Waste Management. There are no interactions between climate and the following environmental aspects; noise and vibration; material assets; cultural heritage; landscape and visual and climate.

20.12.1 Traffic and Transport

The interaction between climate and traffic and transport is regarding GHG emissions from traffic movements and the impact these increased emissions will have.

During the construction phase GHG emissions were assessed against construction activities such as transport emissions. The transport assessment notes that construction traffic will lead to an increase in the number of vehicles using the N67 and N69 roads. Construction materials transport emissions have been calculated based on the estimated daily traffic generation and are assumed to be a 50km round trip. However, there will be no significant effect between traffic and transport and climate during the construction, as the construction phase will be Short-Term, and the CEMP will outline mitigation measures to offset any effects.

During the operational phase, additional road traffic emissions will be limited to those associated with vehicle movements for plant maintenance and other deliveries. The increase in traffic movements during the operational phase is not expected to generate additional emissions to the extent that it could contribute to significant GHG emissions from traffic.

20.12.2 Waste Management

The interaction between waste and climate is regarding GHG emissions associated with the disposal of waste during the construction phase.

The GHG assessment has determined that the fuel associated with the disposal of construction waste was assumed to be 10% of fuel used for the transport of materials, construction plant and machinery. A CTMP, CEMP and RWMP (Appendix 14B, 5A and 18A respectively, EIAR Volume II) have been prepared to mitigate negative impacts on the environment during the construction phase.

During the operational phase, small quantities of oils and chemicals will also be delivered to the Site. The oils and chemicals may result in small quantities of operational waste. During the operational phase some process wastes to be exported from the Site and general waste from the buildings. However, operational waste impacts from the Proposed Development are assessed to be Not Significant.

20.13 Waste Management

The interactions between waste management and other environmental aspects have been discussed in the sections above: 20.4 Biodiversity, 20.7 Water Environment, 20.8 Land & Soils, 20.9 Traffic & Transport, 20.10 Population and Health and 20.12 Climate. There are no interactions between waste management and the following environmental aspects: air quality; cultural heritage; landscape and visual; noise and vibration; material assets and MA&Ds.

20.14 Major Accidents and Disasters

The interactions between MA&Ds and other environmental aspects have been discussed in the sections above: 20.2 Air Quality; 20.4 Biodiversity, 20.7 Water Environment, 20.8 Land and Soils, 20.9 Traffic and Transport and 20.10 Population and Human Health. There are no interactions between MA&Ds and cultural heritage, landscape and visual, noise and vibration, waste management and climate.

20.15 References

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