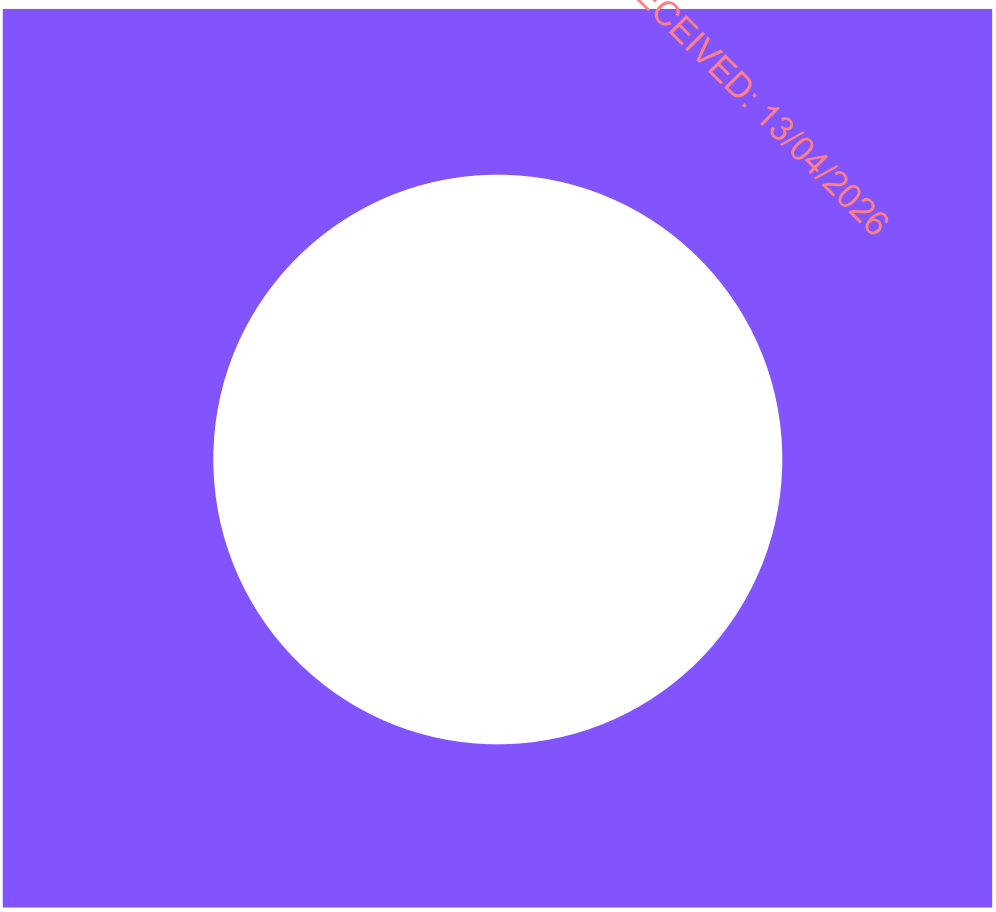
MOTT MACDONALD



Shelburne Energy Farm Environmental Impact Assessment Report

Chapter 18 Interaction of Effects

April 2026

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Contents

Tables

1 Interaction of Effects

1.1 Introduction

This chapter outlines the interactions between the impacts of the Proposed Project identified in this EIAR. The EPA Guidelines 2022 state the following with regards to 'Interactions Between Effects on Different Factors'.

Aspects of the existing environment likely to be affected by the Proposed Project, during both the construction and operational phases, have been considered in detail in the relevant chapters of this EIAR.

"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."

The matrix presented in Table 18.1 has been developed to identify interactions and indirect impacts between environmental topics. Each environmental topic is listed in the first column and the first row of the matrix. In the matrix, a grey or a white square indicates no interaction, while a purple square indicates that a key interaction exists between environmental topics for either or all phases (construction, operation and decommissioning phases). The nature of the environment is such that interactions between all environmental topics are potentially possible and / or may occur to a certain extent for most projects. The purpose of the matrix is therefore to highlight key interactions that are recognised to be specific to this Proposed Project and warranting special consideration.

Key environmental interactions that have been identified in turquoise squares are discussed further in Table 18.2. Each interaction is described in the order of chapters as presented in the EIAR. Cross-references to respective chapters are included for further information.

Table 1.1Interaction of Effects Matrix

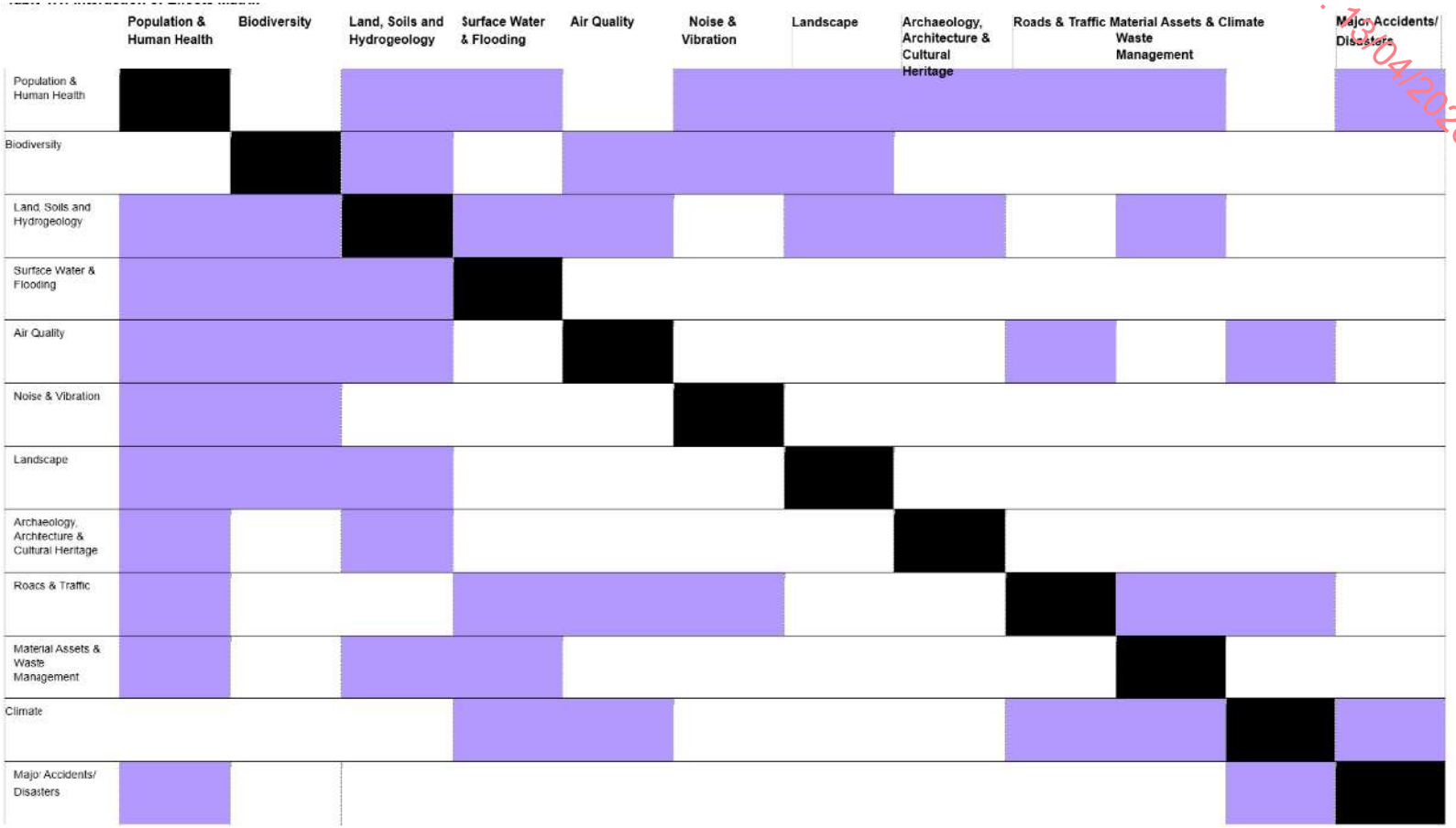

Table 1.2 Interactions Between Disciplines

Interaction	Description
Population and Human Health	**Land, Soils and Hydrogeology** The main interaction between Population and Human Health and Land, Soils and Hydrogeology relates to the potential impact of loss of agricultural land, the solar farm will retain agricultural uses through the implementation of sheep grazing to manage vegetation (grass) growth. The substation and BESS compounds will require recontouring and will result in a loss of agricultural land and usages during all stages of the Proposed Project. Additionally, such earthworks will result in potential for noise disturbance (which is discussed below). Notwithstanding, the overall impact of the loss of agricultural lands and the recontouring of lands required to provide the substation and BESS compounds is imperceptible, as detailed within Chapter 8 Land, Soils & Hydrogeology. **Surface water and Flooding** The Proposed Project poses no flood risk to the local area (either within or outside the Project site). There is potential for impacts during the construction phase from sediment from the recontouring works required for the substation and BESS compound in the absence of mitigation, the risk of pollution as a result of accidental release of fuel/oil/lubricants has potential to impact surface water quality. With the implementation of mitigation measures presented within this EIAR the impacts are likely to be minimised. **Air Quality** Impacts on the local community during the construction phase are likely due to increased dust emissions from increased construction traffic, however the effect will not be significant following mitigation. Localised impacts on air quality are found to be negligible with respect to traffic emissions. Once operational, air quality impacts associated with the Proposed Project are not considered to be significant and the impact of additional trains are considered to be negligible and not significant. **Noise and Vibration** As discussed under Nosie and Vibration below. **Landscape** Visual impacts associated with the Proposed Project have the potential to impact on population, for example, views of machinery during construction. During the operational phase significant change to views or the landscape are assessed as not significant. Mitigation has been provided in the form of vegetation screening around the boundaries of residential properties directly abutting the solar farm. Overall, the Proposed Project, whilst sizeable, is considered to be well sited in a robust part of County Wexford that is not regarded as highly rare or sensitive at a regional or national level. Indeed, the

Interaction	Description
	overall scale and extent of the project will never be fully perceived by surrounding receptors, due to the dispersed nature of the layout combined with the high degree of intervening vegetation. **Archaeology, Architecture & Cultural Heritage** There are interactions between Population and Human Health and Cultural Heritage due to the importance of archaeology, architectural and cultural heritage in communities. There is potential for unrecorded archaeological to be encountered during the earthworks for the substation and BESS compounds. Where the construction works are undertaken in public roads, no impacts are envisaged. Mitigation measures are detailed within Chapter 13 of this EIAR and the Construction Environmental Management Plan which will ensure that such impacts are minimised. The residual impacts are predicted to be neutral or imperceptible following implementation of mitigation measures. **Roads, Traffic and Transportation** Driver delay, road safety and community effects (such as pedestrian delay, severance, non-motorised user amenity, fear and intimidation) due to Proposed Project works have potential to be caused due to an increased volume of traffic on the construction vehicle routes, however as these vehicle movements will occur during construction operations only, they are categorised to be short term effects. Driver journey times will be affected due to the temporary rolling road closures of L4030, L40232 and Unclassified Road and diversion routes will be required. Driver journey times would also be affected by a temporary road closure on L80591.The driver delay resultant from the above road closure ranges between 4 minutes and 13 minute. The impact of the Proposed Project on driver delay at the above road sections is assessed to be at worst minor and therefore not significant. A construction Traffic Management Plan accompanies this EIAR, and there are no residual significant effects upon its implementation. **Major Accidents and Disasters** Chapter 17 Major Accidents and Disasters presents an assessment of whether or not embedded design measures, or legal requirements, codes and standards adequately control the potential major accident and / or disaster. The Proposed Project is not a type of activities which is submit to licencing (pursuant to the Industrial Emission Directive, or Environmental Protection Agency Act 1992 as amended) to prevent and control pollution to air, water or land. There was no identified 'Other Developments' which could act cumulatively with the Proposed Project to cause or impact risk of a major accident or disaster. There are no likely significant adverse environmental effects. There is no requirement for mitigation measures to specifically address potential impacts or risks of major accidents or disasters due to the type of project (no industrial emission of any emission of scale) and the design and embedded mitigation.

Interaction	Description
Biodiversity	**Land, Soils and Hydrogeology** The main interaction between Biodiversity and Land, Soils and Hydrogeology relates to the change in land use, although it retains an agricultural use throughout the solar farm through the application of sheep grazing, there are positive impacts as more intensified farmed areas (Array Area A) will benefit from hedgerow planting. The substation and BESS compounds will require recontouring and will result in a loss of agricultural land and usages during all stages of the Proposed Project, and both compounds will be replaced areas of hardstanding. These recontouring activities have potential to result in some disturbance of flora and fauna adjacent to these earthworks in the absence of mitigation. Notwithstanding, the overall impact of the loss of agricultural lands and the recontouring of lands required to provide the substation and BESS compounds is imperceptible, as detailed within Chapter 8 Land, Soils & Hydrogeology. **Surface water and Flooding** There is potential for impacts during the construction phase from sediment from the recontouring works required for the substation and BESS compound in the absence of mitigation, the risk of pollution as a result of accidental release of fuel/oil/lubricants has potential to impact surface water quality. With the implementation of mitigation measures presented within this EIAR the impacts are likely to be minimised and no likely significant effects will result from the Proposed Project. **Air Quality** There is potential for interactions between biodiversity and air quality. There are no ecological designated sites within 50m of potential dust sources of the Proposed Project or from roads to be used by construction traffic, therefore ecological designations are not considered in the construction dust assessment in Chapter 10 Air Quality. Air quality changes such as dust during construction may affect flora and fauna in vicinity of Proposed Project. Across the different construction activities, the level of risk of dust creating nuisance (without mitigation) is predicted to range from 'medium' to 'high risk' as per the IAQM (2024) Guidance. It is anticipated that dust and particulate matter emissions produced during construction activities would be controlled through the implementation of good practice measures which will be documented in a Construction Environmental Management Plan. **Noise and Vibration** It is considered that there will be an increase in noise levels and impacts on fauna generated from construction activities. Following the implementation of the proposed mitigation measures, these effects will be minimised. The Proposed Project will lead to increases in noise and vibration on ecological receptors; however sound levels will be below levels considered to result in significant adverse effects in the construction or operational and maintenance phases. **Landscape** The proposed planting reinstatement for the Proposed Project will consist of native species, which is a positive effect on biodiversity. The bolstering of native hedgerows

Interaction	Description
	will provide visual screening in addition to the positive biodiversity effect. A total of 15% biodiversity enhancement has been provided through hedgerow, tree planting and retain of marsh habitats.
Land, Soils and Hydrogeology	**Population and Human Health** The Proposed Project requires recontouring of lands totalling 6.92 hectares as such this will result in impacts such as change of land use from agricultural to utility infrastructure at the proposed substation and BESS compounds the solar farm will retain agricultural uses through the implementation of sheep grazing to manage vegetation. Notwithstanding, the overall impact of the loss of agricultural lands and the reencountering of lands required to provide the substation and BESS compounds is imperceptible, as detailed within Chapter 8 Land, Soils & Hydrogeology. **Biodiversity** The proposed recontouring works present a potential risk of sediment entering watercourses adjacent to the Project site. There is a hydrological connection to the Bannow Bay SAC/SPA, however due to the separation distance from the Project site to these designated sites, as assessed in Chapter 7 – Biodiversity the impact to these designated sites is temporary and imperceptible, while the potential for impacts to aquatic and riparian habitat is assessed as temporary and significant due to the potential for significant surface run-off prior to the adoption of mitigation measures. All mitigation measures in relation to silt/sediment control within Chapter 7 Biodiversity and the CEMP will be implemented, as such there are no residual impacts following the implementation of mitigation measures. **Surface Water & Flooding** The requirement for recontouring lands for the substation and BESS compound will result in a change to the ground levels, however, there is no significant change to the surface water run-off patterns. Given the nature of the surface water design which has embedded mitigation it is expected that there are no adverse or significant impacts on surface water quality during operation and maintenance phase, impacts are likely to be long-term but imperceptible. **Air Quality** There are interactions in relation to the effects of dust arisings during the construction stage on sensitive receptors and resulting in trackout along local roads from construction vehicles. As stated above, the level of risk of dust creating nuisance (without mitigation) is predicted to range from 'medium' to 'high risk' as per the IAQM (2024) Guidance. It is anticipated that dust and particulate matter emissions produced during construction activities would be controlled through the implementation of good practice measures which will be documented in a Construction Environmental Management Plan. **Landscape** The Proposed Project will result in changes to the existing ground levels as an area of 6.92hecateres will be subject to cut and fill activities; notwithstanding, due to the topography of the area. All other representative viewpoints were classified as Slight or less,

Interaction	Description
	and in most cases, this is as a result of close and clear views of the proposed solar array in adjacent fields being fully or substantially screened by proposed mitigation screen planting at the road side of the nearest fields. While the GIS building and BESS compound are set well back from the nearest surrounding visual receptors and will be barely discernible, as evidenced in the visual impact appraisal. **Archaeology, Architecture and Cultural Heritage** The Proposed Project will result in the disturbance of land and soils and therefore has potential to impact on undiscovered archaeological remains. There is no direct impact to any recorded monument. A potential direct effect on previously unknown archaeological heritage lies in the uncovering of sub-surface remains. Accordingly, archaeological test trenching is proposed as a mitigation measure and will be carried out for all undisturbed areas of the site prior to any groundworks commencing and will be undertaken by an experienced, licence-eligible archaeologist working under licence from the DHLGH. **Material Assets & Waste Management** The Proposed Project will result in the disposal of soils as a result of cut activities, however, excavated material will be re-used on site wherever possible, where this is not possible spoil will be removed from site and sent for disposal at a licensed waste facility.
Surface Water & Flooding	**Population and Human Health** As discussed above, the Proposed Project, does not result in an increase of flood risk to the surrounding area. **Land, Soils and Hydrogeology** There is no significant impact from the abstraction of groundwater on surface water flow levels due to the low volume of water needed during the operation and maintenance phase of the Proposed Project, which is typically water requirements for the welfare facilities in the GIS building for a team of four people on a single monthly visit. **Roads, Traffic and Transportation** There is a chance that construction traffic could accidentally release fuel/oil which could cause a pollution incident if it reaches a watercourse. There are several bridges across watercourses which construction traffic will encounter however there is no potential for likely significant effects from such a pollution event cause by construction traffic. The magnitude of adverse surface water quality impacts in the absence of additional mitigation is expected to be small (localised scale) to moderate, resulting in moderate adverse impacts of temporary duration prior to the implementation of additional mitigation measures. Appropriate mitigation as outlined within Chapter 9 Surface Water and Flooding and within the Construction Environmental Management Plan.

Interaction	Description
	Material Assets & Waste Management As discussed above, the Proposed Project, does not result in an increase of flood risk to the surrounding area and therefore there is no impact on material assets (utilities) as a result of the Proposed Project. **Climate** Extreme weather events are assessed within the Climate chapter including resulting flooding from such events; however, the Flood Risk Assessment has concluded that no part of the Proposed Project is at risk from flooding even when the modelled extents that take in potential effects of climate change are considered, with the exception of the perimeter fencing to the east in priority to the Owenduff River and a single poleset adjacent to the Tellarought River.
Air Quality	**Biodiversity** Air quality changes on flora and fauna such as dust during construction may affect flora and fauna. Run off from works areas can impact water quality and biodiversity, dust deposition and soiling can impact on biodiversity. Following the implementation of the mitigation measures dust impacts are not predicted to be significant. Consequently, no significant residual dust effects on surface are predicted. **Land, Soils and Hydrogeology** Dust arising from the excavations works to recontour the BESS and substation compounds has potential to impact air quality. Dust soiling effects are 'Medium' to 'High' risk and PM10 effects are 'Low' risk without mitigation. It is anticipated that dust and particulate matter emissions produced during construction activities and emissions from site plant would be controlled through the implementation of good practice measures set out within the Construction Environmental Management Plan which forms part of this EIAR. These mitigation measures are identified as good practice within the Institute of Air Quality Management's (IAQM) 'Guidance on the assessment of dust from demolition and construction', January 2024. **Roads, Traffic and Transportation** During the construction phase, it is not expected that there will be any significant effects from construction road traffic on ambient air quality. There is negligible traffic generated by the Proposed Project during the operational and maintenance phase, impacts are low and not significant, and no mitigation is required. **Climate** Air quality impacts associated with the Proposed Project are not considered to be negligible and not significant as the only air emissions during the operational and maintenance phase relate to limited number of vehicles for essential operations and maintenance activities. The construction phase dust soiling effects are 'Medium' to 'High' risk and PM10 effects are 'Low' risk without mitigation. However, following best practice mitigation specified in the Chapter 10 - Air Quality there will be no residual impacts on dust emissions from construction activities will be negligible.

Interaction	Description
Noise & Vibration	**Population and Human Health** As identified in Chapter 11 of this EIAR, the construction phase will generate an increase in noise levels in the vicinity of the Project site which has the potential to cause a nuisance to sensitive receptors in the area. The appointed contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and all mitigation measures as detail in Chapter 11 Nosie and Vibration and the CEMP will be implemented. The operational and maintenance phase of the Proposed Project will not generate noise levels above those for daytime, evening or night-time at any receptor due to the inclusion of the acoustic barrier. **Biodiversity** It is considered that there will be an increase in noise levels and impacts on the local community generated from construction activities. Following the implementation of the proposed mitigation measures, these effects will be minimised. The Proposed Project will lead to increases in noise and vibration to the closest receptors, with minor to moderate increases in noise. Noise and vibration levels will be below levels considered to result in significant adverse effects. **Roads, Traffic and Transportation** Construction traffic has the potential to result in increases in noise levels at sensitive receptors along haulage routes. On regional roads, R733, R734 and R735, it is forecasted additional movements are calculated to result in increase in the basic noise level between 0.1 to 0.5 dB. The L4023 road between N25 Junction and the L4030 Nash Junction is predicted to have an increase of 1.7 dB. This will have a temporary significant noise impact on the dwellings located alongside this road.
Landscape	Population and Human Health As discussed above. **Biodiversity** As discussed above. Land, Soils and Hydrogeology As discussed above.
Archaeology, Architecture & Cultural Heritage	Population and Human Health As discussed above. **Land, Soils and Hydrogeology** Dust arising during construction phase may temporarily and indirectly impact archaeological monuments within ca. 50m of the works, however, there are no monuments within a 50m radius of the substation and BESS compound where earthwork activities will be undertaken, this effect would be not significant. As stated in Chapter 13 – the archaeological mitigation includes the undertaken of archaeological test trenching prior to any groundworks commencing and will be undertaken by an experienced, licence-eligible archaeologist working under licence from the Department of Housing Local Government and Heritage.

Interaction	Description
Roads, Traffic and Transportation	**Population and Human Health** As discussed above. There are no significant residual roads, traffic and transportation effects predicted during the construction phase following incorporation of measures described within the Construction Traffic Management Plan. **Air Quality** As discussed above. **Climate (Carbon)** There exists a link between construction traffic and the carbon assessment. Transport of construction materials to the Project site is one of the sources for construction-related GHG emissions.
Material Assets & Waste Management	**Population and Human Health** There is no likely significant impact to the local population during any stage in the lifetime of the Proposed Project as a result of waste management. All waste will be managed in accordance with extant waste management legislation during all phase of the Proposed Project. There is no predicted impact on material assets which would result in likely significant effects. A Construction Resource Waste Management Plan has been prepared, following its implementation there are Land, Soils and Hydrogeology As discussed above. **Roads, Traffic and Transportation** There is an interaction between resource and waste management and traffic and transport effects during the construction phase of the proposed development. The transportation of resources and waste to and from the Project site has the potential to affect local traffic and transport patterns during the construction phase. Materials will be transported from the construction compound areas to the various sections of the proposed development and there will also be material requiring transport for disposal, following the excavation of the trenches. A Construction Traffic Management Plan has been produced and will be updated by the appointed contractor. The residual effects on roads and traffic are assessed as not significant. **Climate (Carbon)** Carbon emissions are associated with embodied emissions from the production of construction materials, and transport of those materials and workers to site. Vehicle and machinery usage (electricity, fuel, and water consumption), including for site clearance and temporary construction compounds will result in carbon emissions. Given the context of the development in supporting Ireland's climate commitments, the residual effect of Minor Adverse with mitigation is anticipated with no significant effects expected. In line with the ISEP Guidance, minor adverse means that the Proposed Project 's emissions are in-line with good practice design standards and are also in-line with national net zero pathways.
Climate	**Air Quality** As discussed above. Roads, Traffic and Transportation. As discussed above.

Interaction	Description
	Major Accidents and Disaster Climatic changes as a result of climate change may result in extreme weather events such as storms, this was assessed as a risk scenario within the climate chapter and within the Major Accidents and Disasters chapter. Within the climate chapter, climate resilience assessed a total of 13 climatic scenarios including extreme storms, and impacts to project infrastructure and workforce, the likelihood of such climate variable occurring was assessed as low and very low respectively, and consequence of occurring was categorised as moderate adverse and major adverse, both resulting in a significance rating of not significant.
Major Accidents/ Disasters	Population and Human Health As discussed above. **Climate (Resilience)** As presented in Chapter 11 Climate, the resilience of the Proposed Project to future climate change up to its operational lifetime post-construction of 40 years, to 2070, was assessed. The consideration of extreme weather events is assessed with the Climate chapter and Major Accidents/Disaster chapter respectively. The potential changes in climate may result in a range of impacts on the operation and maintenance of the Proposed Project, such as changes in temperature (extreme highs or lows), storms, drought and flooding; however, no likely significant impacts were predicted. Climate resilience during construction has been scoped out of the assessment as it is considered that changes to climate in the construction period will be negligible relative to the historical weather baseline. The construction phase is currently programmed for 2027 - 2030, and climate is not anticipated to have noticeably changed from the current day