3FMProject

Bringing
Dublin Port
To 2040

Environmental Impact Assessment Report

Chapter 11

Climate

Volume 2 Part 3

COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

RPS
A TETRA TECH COMPANY

Third & Final
Masterplan
Project

11 CLIMATE

11.1 Introduction

This chapter of the EIAR assesses the potential climate impacts from the development of the Dublin Port 3FM Project, and identifies and presents an assessment of the likely significant effects of the 3FM Project (hereafter the 'proposed development') on climate and also the vulnerability of the Project to climatic factors. This chapter will contains an assessment of the consistency of the project with the provisions of the Climate Action and Low Carbon Development Acts 2015 to 2021, the Climate Action Plan 2024 (CAP24), and all applicable domestic and European Union legislative and regulatory requirements. This chapter should be read in conjunction with the Climate Impact Assessment Report presented in Appendix 11-1.

Annex IV to Directive 2014/52/EU includes direct reference to climate and climate change with the emphasis placed on two distinct aspects of the climate change issue:

- Climate change mitigation: this considers the impact the Project will have on climate change, through greenhouse gas emissions primarily; and
- Climate change adaptation: this considers the vulnerability of the Project to future changes in the climate, and its capacity to adapt to the impacts of climate change, which may be uncertain.

This assessment identifies and presents an assessment of the likely significant effects of the proposed development on climate (mitigation) and also the vulnerability of the project to climatic factors (adaptation).

11.2 Assessment Methodology

11.1.1 General

This chapter has been prepared in accordance with the following legislation and guidance documents:

- Directive 2011/92/EU, as amended by Directive;
- The European Commission Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (2017);
- The Climate Action and Low Carbon Development Act 2015;
- The Climate Action and Low Carbon Development (Amendment) Act 2021;
- The Government of Ireland's Climate Action Plan 2024;
- The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018);
- Guidelines on information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, (DHPLG, August 2018); and

- Circular PL 05/2018 -Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive).

Specifically in relation to the climate impact assessment, the methodology adopted is based on the following guidance:

- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013);
- European Commission, Directorate-General for Environment, Guidance on integrating climate change and biodiversity into environmental impact assessment, Publications Office, 2013, https://data.europa.eu/doi/10.2779/11735;
- Institute of Environmental Management & Assessment (IEMA, 2022): Assessing GHG Emissions and Evaluating their Significance;
- British Standards Institution (BSI, 2023): PAS 2080 Carbon Management Infrastructure;
- European Commission (2021): Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027; and
- Institute of Environmental Management and Assessment (IEMA, 2020): Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation (2nd Edition).

Transport Infrastructure Ireland (TII) have used these international and EU standards to devise national climate impact assessment guidelines for national roads, light rail and greenways entitled: Climate Guidance for National Roads, Light Rail, and Rural Cycleways (Offline and Greenways) – Overarching Technical Document PE-ENV-01104 (December 2022). In the absence of any specific, port related, guidance, the framework of the TII guidance will be applied for this assessment.

As per the EU Directive, the TII approach requires that the climate impact assessment must report the project impact on greenhouse gas emissions (GHGs) and the project risk and resilience to climate change through a climate assessment through the following separate assessments:

- GHG assessment: the assessment of GHG emissions identifies the impact of GHGs arising from a project during its lifetime and addresses how the project will affect the ability of the Government to meet its carbon reduction targets; and
- Climate Change Risk (CCR) Assessment: The CCR assessment identifies the vulnerability of a project to climate change and considers adaptation measures to increase the resilience of the project.

The GHG assessment has been undertaken in respect of both the construction and operational phases of the proposed development by considering the GHG emissions associated with materials (embodied carbon), import and transport of construction materials to site, on-site plant and equipment and management of materials arising. This assessment has been undertaken using the PAS 2080 Carbon Management Infrastructure standard, using detailed design information from the design team and calculated via the One Click Life Cycle Assessment (LCA) software tool.

Emissions from road transport of freight/passengers to and from the port, when the proposed development is operational, have been calculated using the TII Road Emissions Model (REM). The REM calculates road

transport emissions integrating the traffic volumes/speeds for light and heavy vehicles on the project to assess the change in emissions associated with road traffic.

Shipping emissions associated with the operation of the proposed development have been quantified using the emission factors presented in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

GHG emissions from on-site energy use during the operational phase are assessed through a review of the proposed changes to operations and energy demands at the site to determine the potential for significant impact.

The combined outputs of the above represent the GHG assessment of this chapter. The purpose of this assessment is to quantify emissions and then to identify measures to avoid or reduce, in so far as practicable, the adverse impacts of GHG emissions from the proposed development on the climate.

The CCR Assessment identifies the impact of a changing climate on the proposed development and receiving environment. The assessment considers the project's vulnerability to climate change and identifies adaptation measures to minimise climate change impacts. The purpose of the CCR assessment is to reduce or manage the adverse impacts and risks of climate change on the proposed development and develop the project's resilience to climate change.

11.1.2 Climate Policy

In 2015, the Climate Action and Low Carbon Development Act 2015 (the 2015 Act) was enacted by the Oireachtas. The function of the 2015 Act was to facilitate Ireland's just transition to a low carbon, climate resilient and environmentally sustainable economy, and this was cited as the 'national transition objective'.

In June 2020, the Government published the current Programme for Government – Our Shared Future (Government of Ireland 2020). Regarding climate, there is a pledge to achieve an average 7% per annum reduction in total GHG emissions from 2021 to 2030. This would result in a 51% total reduction by the end of the decade, and with the ultimate goal of achieving net zero GHG emissions by 2050.

In 2021 the Climate Action and Low Carbon (Amendment) Act 2021 (the 2021 Act) was enacted, giving statutory effect to the core objectives stated within the Climate Action Plan (CAP). The 2021 Act established carbon budgets and sectoral emissions limits and outlines the carbon budget as the total greenhouse gas emissions that are allowed during the budget period.

Section 6B(12) of the 2021 Act requires the Minister for the Environment, Climate and Communications to publish the approved carbon budget programme. In May 2022 the budgets were published, and the total emissions allowed under each budget are set out below, as well as the average annual reduction for each five-year period:

- 2021-2025: 295 Mt CO2e - this represents an average reduction in emissions of 4.8% per annum for the first budget period;
- 2026-2030: 200 Mt CO2e - this represents an average reduction in emissions of 8.3% per annum for the second budget period; and

- 2031-2035: 151 Mt CO2e - this represents an average reduction in emissions of 3.5% per annum for the third provisional budget.

To deliver these budgets, in July 2022, the Government established Sectoral Emissions Ceilings which set maximum limits on GHG emissions for each sector of the Irish economy to 2030.

Section 15 of the 2015 Act defines the duties of certain bodies under the Act. This section was amended by section 17 of the 2021 Act which has replaced section 15(1) to read as follows:

"15. (1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(a) the most recent approved climate action plan,

(b) the most recent approved national long term climate action strategy,

(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,

(d) the furtherance of the national climate objective, and

(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

Each of the above policy documents is described in greater detail in Appendix 11-1.

Both DPC and An Bord Pleanála are relevant bodies under section 15 and must perform their functions in a manner consistent with the policy base listed in section 15(1). Each of the policy elements listed in section 15(1) is described in Appendix 11-1 and this assessment includes an analysis of the consistency of the 3FM Project with these climate policies and whether DPC, in developing the project, has in so far as practicable, performed its functions in a manner consistent with this policy base.

11.1.3 Baseline Climate

Existing climatic data for the study area has been derived from the Met Éireann historical database (https://www.met.ie/climate-ireland/1981-2010/dublin.html). The nearest meteorological station to the port is the Met Éireann Station in Dublin Airport which lies approximately 9km to the north. The 30-year averages from the station at Dublin Airport from 1981 to 2010 are employed to determine the existing baseline.

The description of the evolving baseline climate on a national level is derived from the EPA Report '*The EPA Research Report No. 386 'The Status of Ireland's Climate, 2020' (Walther C.A. Cámaro García and Ned Dwyer) and Met Eireann. '*

An overview of microclimates and macroclimates was categorised by utilising both national-level and site-specific data, and the projected changes were forecasted using Climate Ireland's Climate Change tool.

11.1.4 Baseline Emissions

Baseline emissions profile for the State and the transport sector in particular are derived from the Ireland's Final Greenhouse Gas Emissions 1990-2022 report (EPA, 2024). Similarly, the EPA undertakes emissions projections and the latest projections are presented in Ireland's Greenhouse Gas Emissions Projections 2023-2050 (EPA, 2024) are referenced.

In relation to Dublin Port, the total numbers and types of vessels accessing the port are reported by the Central Statistics Office (CSO) and these baseline shipping levels have been used to establish the baseline shipping emissions at the port based on the emission factors from the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

11.1.5 Construction Stage GHG Assessment

Potential direct and indirect GHG emissions associated with the construction and maintenance of the proposed development includes site clearance, embodied carbon, material transport, construction activities and waste management. This has been quantified using a life cycle assessment (LCA) which is the analysis of environmental impacts associated with the project life cycle from the material extraction to the production, use and its end of life.

The LCA model follows the international standards ISO14040 and ISO14044 and is aligned with guidance set out in PAS 2080 (Green Construction Board Publicly Available Specification (PAS) 2080: Carbon Management in Infrastructure) which suggests a modular structure for capturing and reporting carbon emissions according to lifecycle phase. A full suite of all materials, transport distances and operations during construction, operation and decommissioning have been compiled from the design teams and used to inform this assessment.

11.1.6 Operation Stage GHG Assessment

Road Traffic Emissions

Emissions from road transport when the Project is operational have been calculated using the TII Road Emissions Model (REM). The REM calculates road transport emissions integrating the traffic volumes/speeds for light and heavy vehicles on the project with Irish fleet composition information.

Shipping Emissions

Shipping emissions associated with the current and proposed development have been quantified using the emission factors presented in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories based on a default voyage.

Operational Emissions

GHG emissions from energy use at the port, as documented in the carbon footprint, are assessed through a review of the proposed changes to operations at the site to determine the potential for significant impact.

11.1.7 Climate Change Risk (CCR) Assessment

The CCR assessment identifies the impact of a changing climate on the project and receiving environment. The assessment considers the project's vulnerability to climate change and identifies adaptation measures to minimise climate change impacts. The purpose of the CCR assessment is to reduce or manage the adverse impacts and risks of climate change on the proposed development and develop the Project's resilience to climate change.

11.1.8 Assessment Criteria

The TII Climate Guidance for National Roads, Light Rail, and Rural Cycleways (Offline and Greenways) (December 2022) provides a set of assessment criteria that are employed in this analysis to determine the level of impact from GHG generation. The TII guidance states that the climate assessment is not solely based on whether a project emits GHG emissions alone but how it makes a relative contribution towards achieving a science based 1.5°C aligned transition towards net zero. The TII guidance states that the impact assessment must give regard to two major considerations when assessing the significance of a project GHG emissions including:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The TII criteria for defining magnitude in this chapter for the GHG Assessment are outlined in Table 11-1. It is noted that the TII guidance does not differentiate between the assessment criteria presented for the construction phase (materials and plant use) and operation phase (e.g. road traffic or shipping). However, the context for impact varies between both phases as, for example operational road transport impacts may be directly assessed against the State's transport emission ceilings, these ceilings do not relate to construction activities.

A CAP24 target with greater relevance to the construction phase is the commitment to decrease embodied carbon in construction materials produced and used in Ireland by at least 30% by 2030 which will be employed for determining the significance of impact for this phase of the project.

The CCR Assessment is based on the methodology proposed by the Institute of Environmental Management and Assessment (IEMA, 2020): Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation (2nd Edition). Further details are provided in Appendix 11-1.

Table 11-1: TII Significance Matrix for the GHG Assessment

Effects	Magnitude of Impact	Definition
Significant Adverse	**Major Adverse**	• The project's GHG impacts are not mitigated; • The project has not complied with do-minimum standards set through regulation, nor provide reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	• The project's GHG impacts are partially mitigated; • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero.
Not significant	**Minor Adverse**	• The project's GHG impacts are mitigated through 'good practice' measures; • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	• The project's GHG impacts are mitigated beyond design standards; • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	**Beneficial**	• The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration; • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

11.3 Existing Environment

11.1.9 Receiving Environment

11.1.9.1 Macroclimate

The World Meteorological Organisation (WMO) defines climate as the average weather over an extended period of 30 years. This period is used as it is considered long enough to account for year-to-year variations. Therefore, the existing climate around Dublin Port is estimated using the 30-year (1981-2010) average meteorological data from Met Éireann.

The nearest Met Éireann meteorological station to the project in terms of 30-year averages for climate and weather data which would be representative of climate in the vicinity of the project is the station situated at Dublin Airport, which lies approximately 10km north of the port.

The 30-year average meteorological data[1] from the station at Dublin Airport is presented in **Table 11-2** for each of the past three 30-year average periods. The data shows limited variation for temperature, humidity, and

[1] Met Éireann is due to release updated 30-year average meteorological data in 2022 (yet to be published at time of writing) - https://www.met.ie/climate/30-year-averages

sunshine but there is a trend of increasing rainfall (circa 3% increase) and average wind speed (circa 4% increase) in the period 1981-2010 relative to 1961-1990.

Table 11-2: 30 Year Average Meteorological Data from Dublin Airport

Parameter	30-Year Average		
	1961-1990	1971-2000	1981-2010
Mean Temperature (°C)	9.6	9.8	9.8
Mean Relative Humidity at 09:00 UTC* (%)	82.0	82.4	83.0
Mean Daily Sunshine Duration (Hours)	3.9	3.9	3.9
Mean Annual Total Rainfall (mm)	732.7	734.7	758.0
Mean Wind Speed (knots)	9.9	10.0	10.3

The climate projections for Ireland for the next century indicate that observed climate trends will continue and intensify over the coming decades with impacts ranging from extreme flooding events (both coastal and fluvial) to periods of extended droughts and increased winter precipitation.

11.1.9.2 National Emissions

Greenhouse Gases (GHG) in the atmosphere are rising as a result of human activity, largely emanating from the agricultural, transport, energy, and residential sectors. The main existing sources of GHG in the vicinity of the proposed development are from existing road traffic, rail, shipping, energy, residential space heating, commercial and industrial activity and waste facilities.

At a national level, according to Ireland's Final Greenhouse Gas Emissions 1990-2022 report (EPA, 2024), Ireland's GHG emissions are estimated to be 60.60 million tonnes carbon dioxide equivalent (Mt CO2e), which is 1.9% lower (or 1.15 Mt CO2e) than emissions in 2021 (61.75 Mt CO2e) and follows a 5.1% increase in emissions reported for 2021. Emissions are 0.4% below pre COVID, 2019 figures.

The GHG inventory for 2022 is the second of ten years over which compliance with targets set in the European Union's Effort Sharing Regulation (EU 2018/842) will be assessed. This Regulation sets 2030 targets for emissions outside of the Emissions Trading Scheme (known as ESR emissions) and annual binding national limits for the period 2021-2030. Ireland's target is to reduce greenhouse gas emissions by at least 42% by 2030 compared with 2005 levels.

Ireland's ESR emissions annual limit for 2022 is 42.36 Mt CO2e. Ireland's final 2022 greenhouse gas ESR emissions are 45.90 Mt CO2e, this is 3.54 Mt CO2e more than the annual limit for 2022.

Transport accounts for 19.4% of national emissions in 2022 and road transport accounts for 94.8% of all transport emissions in 2022. Between 1990 and 2022, Transport shows the greatest overall increase of GHG emissions at 128.5%, from 5,143.3 kt CO2e in 1990 to 11,751.3 kt CO2e in 2022, with road transport increasing by 132.6%.

11.1.10 'Do-Minimum' Scenario

The EPA undertakes emissions projections. Its latest projections are presented in Ireland's GHG Emissions Projections 2023-2050 (EPA, 2024). The EPA reports that Ireland is not on track to meet the 51% emissions

reduction target by 2030 (compared to 2018) based on these projections which include most CAP24 measures. Further measures still need to be identified and implemented to achieve this goal. In addition, the following predictions are included in the EPA report:

- The first two carbon budgets (2021-2030), which aim to support the achievement of the 51% emissions reduction goal, are projected to be exceeded by a significant margin of between 17% and 27%.
- Sectoral emissions ceilings for 2025 and 2030 are projected to be exceeded in almost all cases, including in Agriculture, Electricity, Industry, and Transport.
- Ireland will not meet its non-ETS EU targets of a 42% emissions reduction by 2030 in the Additional Measures scenario even with both the ETS and LULUCF flexibilities.
- Emissions in the Additional Measures scenario are projected to be 29% lower in 2030 (compared with 2018) whereas in the Existing Measures scenario the emissions reduction is projected to be 11%. Faster implementation of measures will be required to meet both national and EU targets.

In terms of the transport sector, the main source of emissions is road transport, accounting for approximately 94% of transport emissions in 2021. Various factors influence emissions from this sector, including the economy, employment and fuel costs. For example, energy demand associated with freight transport is significantly influenced by commercial activity in the economy, energy demand associated with personal transport is strongly influenced by employment levels and oil prices. The transport sector also includes combustion of fuel associated with rail, navigation, domestic aviation, and pipeline gas transport (EPA, 2024).

Transport emissions are projected to decrease by between 5% and 26% over the period 2022-2030 depending on the success of the two key scenarios assessed by the EPA which include the following:

- **With Existing Measures (WEM) scenario:**
  - Under the WEM scenario, transport emissions are projected to decrease by 5% over the period 2022-2030 from 11.8 to 11.2 Mt CO_2e;
  - A 10% blend for petrol and a 12% blend for diesel at the pumps by 2025 is assumed and blends remain at this level until 2030; and
  - For uptake of Electric Vehicles, the WEM scenario assumes approximately 693,000 electric vehicles on the road by 2030. This includes approximately 430,000 passenger battery electric vehicles and 263,000 passenger plug-in hybrid electric commercial vehicles.
- **With Additional Measures (WAM) scenario:**
  - Under the WAM scenario, transport emissions are projected to decrease by 26% over the period 2022 to 2030 from 11.8 to 8.7 Mt CO_2e;
  - It is assumed that incremental blend increases will occur reaching a 10% blend for petrol and a 20% blend for diesel at the pumps by 2030 as detailed in Climate Action Plan 2024;
  - Uptake of electric vehicles up to 945,000 by 2030, as a result of the implementation of the Climate Action Plan 2024. This includes over 845,000 private electric vehicles; and

– This scenario also includes a reduction in total vehicle kilometres to be achieved by behavioural and sustainable transport measures outlined in the CAP24, such as a 50% increase in daily active travel journeys and a 130% increase in daily public transport journeys.

The latest projections indicate that the share of total road transport CO_2 emissions from Heavy Duty Vehicles (HDVs) and Light Goods Vehicles (LGVs) is projected to increase from approximately 43% in 2022 to 52% by 2030, and 87% by 2050 in the WAM. This is as a result of continued projected growth in demand for freight transport services as well as faster mitigation of passenger transport emissions.

Future predicted trends in total GHG emissions from transport under the WEM and WAM scenarios are presented in Figure 11-1.

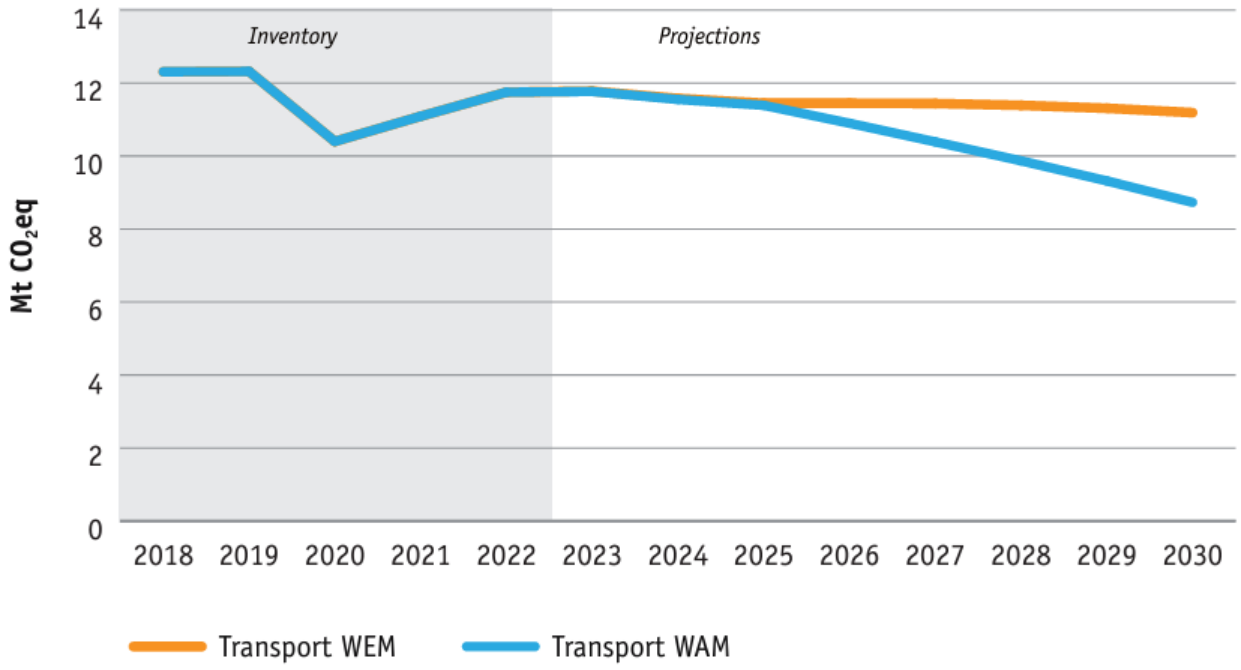

Figure 11-1: Greenhouse Gas Emissions Projections from the Transport Sector under the With Existing Measures and With Additional Measures scenarios out to 2030 (Source: EPA)

11.4 Impact Assessment

11.1.11 Construction Stage

11.1.11.1 Construction Greenhouse Gases

Consideration is given in this section to the construction of the proposed development and the GHG emissions that may arise during the construction phase from the following sources:

- Embodied emissions in the imported materials required for this area relative to other materials. Embodied emissions are the carbon footprint of a material, i.e., the total emissions released throughout the supply chain of the material. This includes the energy required for extraction, processing and disposal of a material. For some materials, such as steel, the use of recycled materials has lower embodied GHG emissions than the use of virgin material;

- Direct emissions from plant machinery and equipment used during the construction phase; and
- Transport emissions from vehicles importing and exporting material to and from the construction site(s).

The following assumptions were made in the assessment where specific data was unavailable:

- Traditional construction methods and materials (virgin steel and other unrecycled materials and Portland cement mixes throughout) have been assumed to allow for quantification of the baseline GHG impact of the construction phase;
- Concrete (precast and poured in-situ) and other materials will be procured from a provider within 100 km from the proposed development;
- Earthworks volumes are based on information from the design team. The total cut volumes are used in each scenario which represent all excavation. These volumes represent the amount of excavated material on-site that can be directly used as fill. At this stage of the proposed development, all fill is assumed to be generic (i.e., no specific materials) and transported via rigid HGV for 50km;
- Waste incurred during construction is based on the provided by the design team and the primary waste stream (soil, stone, aggregate) will be transported to a suitably licensed was the facility circa 50km from the proposed development; and
- The proposed development will not be decommissioned – estimate for decommissioning of the asset not applicable.

The total carbon emissions emitted from the development of the 3FM Project as a result of material use, construction activities and transport to site was calculated to be 201,937 tCO2e, the results are presented in Table 11-3.

Construction material was found to be the largest contributor to the overall construction phase emissions (95%). Within construction material embodied carbon associated with steel (48%) and cement/concrete (33%) had the highest overall emissions share (81%).

The total estimated GHG emissions associated with the proposed construction of the development is calculated at 201,937 tonnes of CO_{2e} and will result in a direct **moderate adverse impact** for climate without further mitigation.

Table 11-3: Estimated Carbon associated with the Construction Phase of Dublin Port 3FM Project

Source of Emissions	tCO_2e	Percentage of Total Emissions
Aggregates	9,139	5%
Cement/Concrete	66,734	33%
Steel	96,137	48%
Asphalt	853	<1%
Other (Including Maritime Village Building)	18,838	9%
Total Embodied Carbon from Construction Material	191,701	**95%**
Construction	5,650	3%
Dredging	4,586	2%
Total Carbon from Construction Activities	10,236	**5%**
Total Embodied Carbon	201,937	**100%**

11.1.12 Operation Phase

11.1.12.1 Operation Phase Port Activity

The expected electrical power consumption of the proposed development was calculated based on the estimated demand during the operation phase (including shore to ship power demand). Using the EPA 2022 emissions intensity of power generation (332g CO2/kWh) the total tonnes of CO2e (tCO2e) that will be emitted during the operation phase is estimated to be 10,599 tCO2e per annum.

The percentage of total electricity generation in the State derived from renewable sources in 2022 was 38.6%. CAP24 includes a target to increase the share of electricity generated from renewable sources to 80% by 2030. In future years, the carbon intensity of the electricity generating sector will continue to reduce with the increasing share of renewable generation.

In March 2020 the EU Technical Expert Group on Sustainable Finance (TEG) published its recommendations for an EU Taxonomy for Sustainable Activities. A key feature of the recommendations around electricity generation was a target emissions threshold of 100g CO2e/kWh by 2050. As the fraction of renewable energy increases within the grid, the emissions intensity of electricity will reduce to reach this target in 2050.

Once the State complies with these targets, the annual operational emissions will drop from 10,599 tCO2e (using the 2022 carbon intensity) to 3,193 tCO2e in 2050 assuming the EU target is achieved (refer Table 11-4).

Table 11-4: Dublin Port's Estimated Electricity Emissions

Year	kWh	Emissions Factor	Total tCO_2e
2023	31,923,302	0.000313	10,599
2050	31,923,302	0.000100	3,192

Port activity emissions equate to approximately 10,599 tonnes CO2e per annum based on the 2022 energy mix but these emissions are predicted to decrease in future years with the decarbonisation of the electricity grid. It is considered that this operational emissions meet the following criteria:

- The 3FM Project's GHG impacts are mitigated through 'good practice' measures such as through the electrification of works thereby allowing for natural mitigation through the grid;
- The Project has complied with existing and emerging policy requirements such as the shore to ship power and the use of low carbon electricity; and
- The operations are fully in line to achieve Ireland's trajectory towards net zero.

In short, operational emissions are considered to pose a direct **minor adverse climate impact** over the long term.

11.1.12.2 Operational Phase Road Traffic

Emissions from road transport when the 3FM Project is operational have been calculated using the TII Road Emissions Model (REM). The REM calculates road transport emissions integrating the traffic volumes/speeds for light and heavy vehicles on the project with Irish fleet composition information.

Traffic information for both the port's Northern and Southern Estates and the surrounding public roads have been incorporated into the model to simulate the impacts of the planned increases in throughput associated with the proposed development and the impacts of the Southern Port Access Route (SPAR).

The traffic model for the 3FM Project predicts future traffic levels across the wider road network in the area around the port both in the absence (i.e. the Do-Minimum scenario) and presence of the Project (i.e. the Do-Something scenario). The predicted emissions for operational traffic under both scenarios are presented in Table 11-5.

Results are presented for each of the three REM scenarios i.e. the Business-as-Usual scenario with no progression on climate policy; a Climate Action Plan scenario assuming full implementation; and an intermediate scenario as per the TII guidelines.

The results for the Do-Minimum 2040 scenario indicate that road traffic emissions will generate 29,202 tonnes per annum of GHG under the Business-as-Usual scenario whereby no climate mitigation policies for transport are adopted. This would reduce to 25,172 tonnes per annum if the full CAP24 measures were adopted by the State.

With the proposed development in operation with an increased port throughput and the SPAR in operation, the total GHG emissions are predicted to increase by circa 14-16% per annum regardless of the implementation of the CAP24 policies.

Table 11-5: Predicted Annual GHG Emissions from Road Transport from the Project

Scenario	BaU Scenario (tonnes CO_2e)	Intermediate Scenario (tonnes CO_2e)	CAP Scenario (tonnes CO_2e)
Do-Minimum 2040	29,202	26,537	25,172
Do-Something 2040	33,403	30,703	29,319
Change (%)	**+14%**	**+16%**	**+16%**

Employing the TII significance criteria, the following considerations apply to the operational road traffic emissions for the Do-Something scenario relative to the Do-Minimum scenario:

- The Project's GHG impacts will be somewhat mitigated through legislative measures – in the case of the modelled emissions under the CAP24 scenario, this includes national measures such as the electrification of the fleet and the biofuels blend as per CAP24. These national mitigation measures are inherent in the calculations presented through the CAP24 implementation scenario presented;
- The project complies with existing and emerging policy requirements, again through the implementation of CAP24 policy measures such as EV and biofuels in the CAP24 scenario modelled; and
- The predictions suggest that the Do-Something scenario will increase significantly and therefore is not fully in line to achieve Ireland's trajectory towards net zero.

With these factors considered, the net impact on climate of the operational phase traffic emissions is classed as an indirect **moderate adverse climate impact** in the long term.

11.1.12.3 Operational Phase - Shipping Emissions

In addition to road transport, marine transport is also a potential source of GHG from the proposed development. It is acknowledged that as an island nation, the Irish economy is reliant on the movement of goods to Great Britain, mainland Europe or other jurisdictions through air or marine transport.

While shipping is the low-carbon option relative to aviation, it remains a source of GHG emissions and the total shipping volumes at the port from 2016 to 2022 have been derived from both the CSO[2] and DPC[3] databases and these are presented in Table 11-6.

Also included in the table is the total throughput for each year and the calculated average throughput per cargo vessel. This indicator shows a continued increase reflecting the move towards larger vessels meaning greater throughputs may be accommodated within the same numbers of albeit larger vessels.

Table 11-6 also shows a metric of the average number of sailings per week over the seven year period with the average ranging from 139 per week (during Covid) up to 151 before Covid in 2018.

The 3FM Project will facilitate an increase in both Roll On/Roll Off (Ro-Ro) and Lift On/Lift Off (Lo-Lo) freight at Dublin Port. As per the projection rationale presented in Chapter 2, the net change in vessel numbers will result in circa ten additional sailings per week utilising the berths at the South Port (Areas K, L and N). This net increase in sailings per week equates to a 7% increase on the baseline levels of sailings shown in Table 11-6 with additional Ro-Ro and Lo-Lo services and a reduction in cargo services.

Shipping emissions associated with the current and proposed development have been quantified using the emission factors presented in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories based on a default voyage. Table 11-7 provides the 2022 GHG emissions generated from shipping at the port as well as the emissions associated with the proposed development.

[2] Link: https://www.cso.ie/en/statistics/transport/statisticsofporttraffic/

[3] Link: https://www.dublinport.ie/trade-statistics/

Table 11-6: Total Shipping and Cargo Volumes 2016 to 2022

Vessel Type	2016	2017	2018	2019	2020	2021	2022
Roll On/Roll Off	6,120	6,238	6,157	6,178	5,867	5,826	5,959
Load On/Load Off	882	834	966	870	814	899	855
Bulk Solid	80	44	60	61	69	40	35
Bulk Liquid	474	470	527	540	473	454	530
Passenger	109	127	150	157	1	0	23
Total Throughput ('000 Gross Tonnes)	**34,931**	**36,428**	**38,001**	**38,145**	**36,859**	**34,929**	**35,631**
Total Sailings	**7,665**	**7,713**	**7,860**	**7,806**	**7,224**	**7,219**	**7,402**
Average Sailings per Week	**147**	**148**	**151**	**150**	**139**	**139**	**142**
Average '000 Gross Tonnes per Cargo Vessel	**4.56**	**4.72**	**4.83**	**4.89**	**5.10**	**4.84**	**4.81**

Table 11-7: Shipping Emissions for the Baseline (2022) and Do-Something Scenarios

Scenario	Total Emissions (kilotonnes CO_2e)
Baseline (2022)	4,503
Do-Something	4,880

Table 11-7 shows that the total GHG emissions from the proposed development will increase by 8% per annum with the additional ten sailings per week.

It is important to note that these calculations are highly conservative and do not include any reduced emissions associated with engine and fuel type as mandated through policy such as the International Maritime Organisation ambition to reach net zero emissions from international shipping for 2050[4]. In addition, CAP24 requires the p*romotion of Renewable Fuel Use in Maritime Transport.*

Given the existing legal requirements around fuel and emissions for shipping, the extent of emissions per vessel are gradually reducing and will continue to reduce in future years. As such, the analysis presented in Table 11-7 should be considered a conservative worst-case estimate.

In summary, total shipping emissions are projected to increase by 8% relative to baseline. This increase does not include or any of the projected fuel and engine improvements anticipated under international maritime policy and the EU regulations. The residual impact from shipping is considered under the following criteria:

[4] https://ec.europa.eu/commission/presscorner/detail/en/ip_23_3745

- The project's GHG impacts will be somewhat mitigated through EU and international legislative measures on fuel and engine technology and the inclusion of shipping in the ETS and this mitigation has not been factored into the analysis presented;
- The project complies with existing and emerging policy requirements such as the inclusion of shipping in the EU ETS and the policy move towards more sustainable fuels; and
- The predictions suggest that the Do-Something scenario will increase and therefore is not fully in line to achieve Ireland's trajectory towards net zero.

With these factors considered, the net impact on climate of the operational phase shipping emissions is classed as **moderate adverse climate impact** in the long term.

11.1.12.4 Climate Change Adaption

In line with the IEMA guidance, a sensitivity and vulnerability analyses were carried out on both the construction and operation phase of the project to identify which climate hazards are relevant to the proposed development. Coastal flooding, fluvial flooding, extreme heat, extreme cold and extreme wind were identified as key risks and further assessed in the climate risk assessment. Refer to Appendix 11-1 for further details.

The climate change assessment shows that with the detailed controls in place, the risk of adverse climate impact on the proposed development has been suitably mitigated to reduce the likelihood of such an event having a significant adverse impact. In short, the vulnerability of the works and operations to climate change has been suitably mitigated and the potential impact is considered to be minor adverse for the short-term construction phase and for the longer term operational phase.

11.1.13 Mitigation Measures

11.1.13.1 Construction Phase – Greenhouse Gases

The projected emissions from the construction phase are presented using traditional methods and materials and result in a moderate adverse impact. The need to mitigate these impacts is clearly signalled in national policy such as CAP24 (*3.5.1 Specify low carbon construction methods and low carbon cement material as far as practicable for directly procured or supported construction projects from 2023*). There has been ongoing interaction between the Project's climate team and the design team to assess the potential pathways for mitigation during construction of the proposed development.

Embodied carbon in the materials employed in the construction phase dominate the impact, in particular, those relating to cement/concrete and steel. As such, to mitigate these impacts mandatory use of the following materials will be required by any contractor as a contractual obligation:

- As a replacement for traditional precast concrete materials made with Portland cement mixes, the proposed development will use 50% (as a minimum) ground granulated blast-furnace slag (GGBS) cement for all structural and non-structural precast structures, kerbs, drains, etc. The exception to this commitment are the concretes required for the SPAR bridge which cannot meet this commitment at present;

- Similarly, all concrete poured *in-situ* for the proposed development will consist of 50% (as a minimum) GGBS cement blend as a minimum; and
- Reinforcing steel or other steel employed on site will be 85% (as a minimum) recycled steel but this excludes any structural steel associated with the SPAR bridge, sheet piles and the tubular steel piles in the marine areas.

DPC will revisit this mix during detailed design to seek to achieve greater embodied reductions where possible based on industry practices, availability of material at the time of construction and the availability of novel low carbon substitutes.

The total embodied carbon saved by these measures is 57,533 tCO_2e which is equivalent to 30% of the total embodied carbon estimated for the proposed development (191,701 tonnes). This level of design mitigation meets the target set in CAP24 for reducing embodied emissions.

It is important to note that during the detailed design and construction phases there will be ongoing value engineering to optimise material volumes, material choices and construction methods. This value engineering may alter the mix of materials and carbon footprint presented in this assessment but the commitment to achieving a 30% reduction on the of the total embodied carbon will not change. DPC commits to achieving or exceeding this target in line with the requirements of CAP24 regardless of the volumes and mix of materials.

This commitment will be tracked through a Project Carbon Management Plan (PCMP) (refer to the CEMP (under separate cover)) which will be developed in accordance with PAS 2080 (Carbon Management in Infrastructure). The PCMP is used to monitor and report on the above committed carbon management measures and all other measures adopted during the design, procurement and construction phases.

In addition to the above mitigation regarding material choices, there are a series of additional construction mitigation measures that will also be adopted as follows:

- The use of non-concrete assets shall be optimised in the design, e.g. gravel footpaths, grassed drains etc. to minimise the need for concrete.
- All aggregates required for pavement materials shall be secondary aggregates. Virgin aggregates shall only be employed where it is demonstrated that secondary aggregates are unsuitable for structural reasons and/or they are unavailable.
- Wherever available, the contractor shall secure construction materials from local/regional sources or sources within the State to minimise material transport emissions and reduce life cycle carbon emissions associated with the construction materials.
- For electricity generation at the construction compounds, hydrogen generators or electrified plant shall be utilised over traditional diesel generators. This shall also apply to lower powered mobile plant, as appropriate.
- A regular maintenance schedule for all construction plant machinery shall be undertaken to maintain optimum machinery efficiency.
- Sustainable timber post fencing will be specified over steel in boundary treatments where possible.

- Engines will be turned off when machinery is not in use.
- The use of private vehicles by construction staff to access the site will be minimised through the encouragement of use of public transport, encouragement of car sharing, and maximising use of local labour to reduce transport emissions. To implement this, the contractor shall prepare a Mobility Management Plan for site staff.

11.1.13.2 Operational Phase – Port Activity

Port operations have been designed to meet EU and Marpol requirements for energy demand management and efficiency. Measures adopted in the design include the following:

- Infrastructure to support Shore to Ship Power will be installed for vessels berthed at Area N and Area K to provide required hoteling load for vessels, allowing engines to be turned off when vessels are berthed; and
- Charging infrastructure will be provided to support electric HGV/car charging ports.

11.1.13.3 Operational Phase – Road Traffic

Mitigation of road traffic emissions are mainly achieved through EU legislation driven improvements in fuel and engine technology resulting is a gradually reducing emissions per vehicle profile. The collection of EU Directives, known as the Auto Oil Programme, have outlined improved emission criteria which manufacturers are required to achieve from vehicles produced in the past and in future years. This is a trend which has been in operation for many years and is destined to continue in future years for both cars and heavy goods vehicles. The introduction of the National Car Test (NCT) has also helped to reduce transport emissions by ensuring that all vehicles on Irish roads over four years old undergo an emissions test.

In terms of project specific mitigation for road transport, the proposed development includes 4.6km of Active Travel Path (cycle, pedestrian, wheelers etc.) and 2.6km of new or upgraded footway for the SPAR and Poolbeg Peninsula, which will link with the 1.4km Liffey Tolka Greenway in the North Port, and from there to the 4.0km Tolka Estuary Greenway currently under construction by Dublin Port. DPC will also provide Dublin City Council with a €5 million contribution for future upgrading of the existing coastal path along the southern perimeter of the Poolbeg Peninsula.

DPC is currently developing an initiative with the haulier companies operating in the port to provide the necessary Compressed Natural Gas (CNG) fuelling infrastructure across the port to facilitate the future trend for HGVs to change fuel from diesel to CNG. There are significant reductions in pollutants generated when using CNG relative to diesel highlighting the potential value of this DPC mitigation for transport emissions.

11.1.13.4 Operation Phase - Shipping Emissions

A number of EU Directives and the requirements of the Marpol Convention regulate the fuels and emissions employed in the shipping industry. Since January 2024, the ETS has been extended to cover CO2 emissions from all large ships (of 5,000 gross tonnage and above) entering EU ports, regardless of the flag they fly. The system covers:

- 50% of emissions from voyages starting or ending outside of the EU (allowing the third country to decide on appropriate action for the remaining share of emissions); and

- 100% of emissions that occur between two EU ports and when ships are within EU ports.

The EU ETS covers CO2 (carbon dioxide), CH4 (methane) and N2O (nitrous oxide) emissions, but the two latter only as from 2026.

Each company with ships trading in the European Economic Area (EEA) is required to surrender emission allowances corresponding to a certain amount of its GHG emissions over a calendar year, starting with 40% of emissions in 2024, 70% in 2025 and 100% in 2026. The emissions are reported and verified through the existing EU Monitoring, Reporting and Verification (MRV) system, which will be revised and extended to cover necessary GHG emissions, ship types and sizes.

In July 2023, the IMO adopted a revised version of its GHG emissions strategy, which targets emissions from international shipping to reach net-zero by or around 2050 (compared to the 2018 strategy target of a 50% reduction in emissions with respect to 2008 levels). Member states agreed to 'indicative checkpoints' that call for reducing total GHG emissions by 20% and striving for 30% by 2030 and 70% and striving for 80% by 2040, both relative to 2008. Emissions will now be considered on a life-cycle (or well-to-wake) basis. The next steps will be to agree on mid-term measures to meet the revised objectives, such as GHG intensity standards or a fuel levy/reward.

In March 2023, the European Council and the European Parliament reached another provisional agreement on the FuelEU Maritime initiative, which imposes constraints on the average annual GHG intensity (on a well-to-wake basis) of onboard energy used by ships. These limits become stricter over time, starting at a 2% reduction in 2025, rising to 6% in 2030 and up to 80% in 2050, relative to the 2020 GHG intensity.

These requirements will remain in practice throughout the operation of the 3FM Project and may be replaced with more stringent emission limits as further legislation driven mitigation.

11.1.13.5 Cumulative Impact

A cumulative impact assessment has been undertaken to consider potential for cumulative climate impact of the 3FM Project with other approved development. The assessment has considered cumulative sources and impact pathways which could impact on climate.

Projects have been screened-in to the analysis where there is potential for significant climate impacts (positive or negative) and these are listed in Table 11-8. It is noted at the outset that all projects/developments will generate greenhouse gases (GHGs) from construction (via materials, operations and transport) and therefore there is a cumulative net adverse impact for climate from the construction of all projects on the list.

Table 11-8: Projects Screened-in for Potential Cumulative Effects on Climate

Project Descrioption
In-Port Projects
Alexandra Basin Redevelopment (ABR) – ABP Reg. Ref. PL29N.PA0034
MP2 Reg. Ref. ABP-304888-19
1.4km pedestrian walkway and a 2-way cycle lane – Reg. Ref. 3220/21
T10 Link Road – Reg. Ref. 4894/22
Dublin Harbour Capital Dredging Project – Reg. Ref. Foreshore Application FS007164/DAS Application S0033-01
Dublin Port Maintenance Dredging Programme 2022–2029 – Reg. Ref. FS007132 / DAS Permit S0004-03
Open Cycle Gas Turbine (OCGT) and a generating plant. – Reg. Ref. PWSDZ3074/23 – done Q26
Underground Cable Programme is set to replace and upgrade five 220kV circuits – Reg. Ref.
Construction of a new 220kV gas insulated switchgear (GIS) Switchboard building – Reg. Ref. 4057/23.
Planning permission for the continuation of use of an existing concrete batching plant and associated facilities. Reg. Ref. PWSDZ3469/22
Development at the Ringsend Wastewater Treatment Plant. Reg. Ref. 5319/22
Upgrade of the Ringsend Wastewater Treatment Plant (WwTP). Reg. Ref. PL29S.301798
Projects in the area Surrounding Dublin Port
North Lotts & Grand Canal Dock Planning Scheme 2014- BP Ref. PL29N.ZD2011
Point Bridge and Dodder Bridge
The Howth Yacht Club Marina Extension – Reg. Ref. DAS Permit Reg. No. S0010-01
Poolbeg West SDZ. BP Ref. PL29N.ZD2013
Development that will be for mixed usage – Reg.Ref. PWSDZ3270/19
Development that will be for mixed usage – Reg.Ref. PWSDZ3207/21
Development that will be for mixed usage – Reg.Ref. PWSDZ4121/21
Development that will be for mixed usage – Reg.Ref. PWSDZ3406/22
Development that will be for mixed usage – PWSDZ3062/24
Offshore Wind Energy Projects
Dublin Array Wind Farm – Reg. Ref. FS007188
Codling Wind Park – Reg. Ref. FS007045
North Irish Sea Array – Reg. Ref. FS007031
Seastacks Wind Farm - Reg. Ref. FS007134

There are potential cumulative construction phase impacts for each of the in-port projects listed through the need for significant material inputs depending on the scale of the projects listed as well as material transport. It is noted that both the larger projects, the ABR and MP2 projects (which include other listed projects such as the roads within the port and the capital/maintenance dredging, etc.), were subject to EIA processes. The climate impact assessments for these projects included construction phase mitigation to support the use of low carbon materials for these projects. Therefore, while there is potential for cumulative construction phase impact to

climate from embodied carbon in materials and construction methods from these Dublin Port projects, the cumulative impacts are considered minor adverse given the level of mitigation applied.

In terms of the operation phase of the in-port projects, the ABR and MP2 projects (including the associated road/walkway development) are key features of the DPC Masterplan and both projects, in combination with the 3FM Project, will facilitate greater shipping and road traffic movements at the port. However, it is noted that these cumulative shipping and traffic volumes have been accounted for in the traffic and shipping numbers in the 3FM Project assessment presented in Section 11.1.2 of this chapter. As such, there is potential for indirect cumulative adverse climate impacts from the transport elements associated with these projects. Mitigation of both road and marine transport emissions is mandated at EU and national level through climate policy and the residual cumulative climate impact from shipping and road traffic from these projects is considerate moderate adverse.

There will also be direct GHG combustion emissions from the OCGT (periodically) and the concrete batching plant and to a lesser degree the upgrade of the treatment plant and the GIS switchboard. These will be in addition to the direct operational emissions at the port energy use but the cumulative impacts during the combined operations are classed as a minor adverse climate impact.

For the projects in the area surrounding Dublin Port and Poolbeg West SDZ, there are potential construction phase impacts associated with the significant material inputs required and therefore potential for cumulative adverse impact from embodied carbon in materials and construction methods. The cumulative impacts are considered minor adverse given the level of mitigation applied as mandated by the Climate Action Plan policies on embodied carbon.

During operations, each of these developments will generate (such as the North Lotts/Grand Canal scheme, Poolbeg West SDZ and Howth Yacht Club Marina Extension) or carry (the Point Bridge and Dodder Bridge) additional road traffic volumes on the local road network. It is noted that these additional traffic volumes have been accounted for in the traffic analysis presented in this report for the 3FM Project. Traffic and transport emissions from these developments may be somewhat mitigated through the active travel proposals included in the 3FM Project which are beneficial relative to the baseline infrastructure. As noted, mitigation of road transport emissions is mandated at national level through the CAP and the residual cumulative climate impact from road traffic from these projects is considerate moderate adverse.

Space heating at these residential/leisure developments may also generate direct greenhouse gas emissions and electricity use during operations will have an indirect climate impact. The scale of this impact will depend on the carbon intensity of the power generation sector and the energy demand of the development.

11.1.13.6 Interactions

The assessment of interactive effects has considered likely significant effects that may arise during construction, operational and maintenance, and decommissioning phases of the 3FM Project. The assessment of interaction of effects has been undertaken on a qualitative basis based on best scientific knowledge.

Climate change will result in modified climate conditions and an increase in extreme weather events and the adaption of the 3FM Project to these impacts has been considered into the design of the project (see Chapter

5 Project Description). This adaption is also addressed within the EIAR section relating to Risks of Major Accidents and Natural Disasters.

The Project Rationale and Project Description chapters of the EIAR have provided information on construction works, port activities and shipping numbers that have been used to inform the analysis in this report.

The effects on climate also have the potential to have secondary interactive effects on the following receptors:

- Traffic and transport – the road traffic information provided in this chapter has been utilised to quantify the potential greenhouse gas emissions associated with road traffic generation on the immediate road network as a result of the operation of the 3FM Project;
- Air quality – the key sources for the generation of greenhouse gases during the operation phase include shipping, road traffic and port operations and these combustion sources are also relevant for the air quality assessment and both assessments have interacted to align the input data and assumptions employed;
- Population and Human Health – the effects of the project on climate and the resulting indirect effects on population and human health have been included such as the public health effects from climate change and adaptation and the public health effects from wider societal infrastructure and resources; and
- Biodiversity – a specific assessment of the benefits on ecological receptors is not provided in biodiversity chapter, however, it is widely recognised that climate change affects ecosystems on land and in water in many ways. The Intergovernmental Panel on Climate Change (IPCC) Synthesis Report of the IPCC Sixth Assessment Report (Ar6) (IPCC, 2023) summarises the state of knowledge of climate change, its widespread impacts and risks, and climate change mitigation and adaptation. It also recognises the interdependence of climate, ecosystems and biodiversity, and human societies.

11.1.13.7 Climate Adaption Plan

DPC is committed to formulating a Climate Adaption Plan that is cognisant of the Department of Transport plan and the *Sectoral Planning Guidelines for Climate Change Adaption* published by the Department of Communications, Climate Action & Environment. The mitigation plan will be reviewed in line with the Climate Action and Low Carbon Development Act 2015, CAP24 and all subsequent annual updates to the Climate Action Plan. This will ensure that an iterative approach to adaptation planning is informed by the latest scientific evidence thus enabling DPC to modify or escalate adaptation actions as appropriate.

11.1.14 Residual Impacts

11.1.14.1 Construction Phase

The residual impact from the construction stage is assessed against the assessment criteria:

- It is considered that the Project's GHG impacts are mitigated through 'good practice' measures such as through sustainable material choices to reduce embodied carbon from the construction of the proposed development by 30%; and
- The construction stage of the Project has complied with existing policy requirements and, in particular, the target in Chapter 13 of CAP24, which sets a target to decrease embodied carbon in construction materials

produced and used in Ireland by at least 30% by 2030. The mitigation in the proposed development achieves this target in reducing the total embodied carbon in the construction materials for the 3FM Project by 30%.

For both of the above criteria, the residual impact on climate of the construction phase emissions, with the committed mitigation in place, would be a **direct minor adverse climate impact** over the short-term construction phase.

11.1.14.2 Operational Phase

Port activity emissions equate to circa 10,599 tonnes CO2e per annum based on the 2022 energy mix but these emissions are predicted to decrease in future years with the decarbonisation of the electricity grid. It is considered that this operational emissions meet the following criteria:

- The project's GHG impacts are mitigated through 'good practice' measures such as through the electrification of works thereby allowing for natural mitigation through the grid;
- The project has complied with existing and emerging policy requirements such as the shore to ship power and the use of low carbon electricity; and
- The operations are fully in line to achieve Ireland's trajectory towards net zero.

In short, emissions from port activity are considered to pose a **direct minor adverse climate impact** over the long term.

Employing the significance criteria, the following considerations apply to the operational road traffic emissions for the Do-Something scenario relative to the Do-Minimum scenario:

- The project's GHG impacts will be somewhat mitigated through 'good practice' measures – in the case of the modelled emissions under the CAP scenario, this includes national measures such as the electrification of the fleet and the biofuels blend as per CAP24. These national mitigation measures are inherent in the calculations presented through the CAP implementation scenario presented;
- The project complies with existing and emerging policy requirements, again through the implementation of CAP policy measures such as EV and biofuels in the CAP scenario modelled; and
- The predictions suggest that the Do-Something scenario will increase and therefore is not fully in line to achieve Ireland's trajectory towards net zero.

With these factors considered, the net impact on climate of the operational phase traffic emissions is classed as **indirect moderate adverse climate impact** in the long term.

Total shipping emissions are projected to increase by 8% relative to baseline. This increase does not include or any of the projected fuel and engine improvements anticipated under international maritime policy and the EU regulations. The residual impact from shipping is considered under the following criteria:

- The project's GHG impacts will be somewhat mitigated through EU and international legislative measures on fuel and engine technology and the inclusion of shipping in the ETS and this mitigation has not been factored into the analysis presented;

- The project complies with existing and emerging policy requirements such as the inclusion of shipping in the EU ETS and the policy move towards more sustainable fuels; and
- The predictions suggest that the Do-Something scenario will increase and therefore is not fully in line to achieve Ireland's trajectory towards net zero.

With these factors considered, the net impact on climate of the operational phase shipping emissions is classed as **an indirect moderate adverse climate impact** in the long term.

11.5 Conclusions

The construction phase climate assessment was carried out to identify sources and quantify total GHG emissions generated from the construction activities associated with the proposed development. A series choices of low carbon steel and concrete materials will help mitigate this impact and fully comply with the targets of CAP24. As such. the GHG emissions associated with the proposed construction of the development will result in a direct permanent minor adverse impact.

GHG emissions from energy use at the port are assessed through a review of the energy demand to support the proposed changes to operations at the site to determine the potential for significant impact. With the planned and ongoing decarbonisation of the grid the climate impact of this energy demand will decrease in future years. These impacts are considered as a direct permanent minor adverse impact for climate.

A prediction of the local impact of traffic-derived emissions during the operation phase was carried out and the results of the analysis of the proposed development indicates that traffic emissions will increase in future years as a result of the increased throughput to the port. The impacts to climate from road transport generated emissions is considered an indirect moderate adverse in the long term.

Shipping emissions associated with the proposed development have been quantified based on the projected increases in shipping numbers at the port as a result of the 3FM Project. Shipping emissions are predicted to increase and will result in an indirect long term moderate adverse impact for climate.

The climate vulnerability of the proposed development has been suitably mitigated through the planned construction works and final design to ensure no significant adverse climate adaptation risk.

In deciding whether to grant development consent, An Bord Pleanála (ABP) is required under Section 15 of the Climate Action and Low Carbon Development Act 2015, as amended, to perform its functions, in so far as practicable, in a manner consistent with the following:

- The most recent approved climate action plan;
- The most recent approved national long term climate action strategy;
- The most recent approved national adaptation framework and approved sectoral adaptation plans;
- The furtherance of the national climate objective; and
- The objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.

This climate policy base is summarised in Appendix 11-1 and presents a summary of the relevant policy objectives and actions and provides an overview of the consistency of the proposed development to these policies.

In short, the analysis shows that in the event that ABP decides to grant permission for the 3FM Project, it would be performing its assessment and consenting function, in so far as practicable, in a manner consistent with the following:

- The most recently approved Climate Action Plan;
- The most recently approved national long term climate action strategy;
- The most recently approved national adaptation framework and approved sectoral adaptation plans;
- The furtherance of the National Climate Objective; and
- The objective of mitigating GHGs and adapting to the effects of climate change in the State.

For impacts under the direct control of DPC, such as the construction works, the onsite energy use or the climate resilience, the impacts have been suitably mitigated and designed in line with national policy.

The carrying out of the construction phase of the proposed development will be fully aligned with the requirements of policies relating to the climate impact of these activities, while the energy efficiency measures, active travel, modal shift and electric or other low carbon vehicle enhancements in the operational phase will all contribute to the national targets and measures for these elements of national and international policy.

While there are significant indirect impacts to climate identified as a result of road traffic and shipping, the planned legislative mitigation measures at international, EU and national levels will reduce these impacts. DPC will continue to perform its functions, in so far as practicable, in a manner consistent with any current or future climate policy on road traffic and shipping to aid in the reduction of these indirect sources.

In conclusion, DPC have devised the proposed development to be consistent, in so far as practicable, with the relevant climate policy base and, in assessing the proposed development and deciding to grant permission for the 3FM Project, the Board would comply with the requirements of section 15 of the Climate Action and Low Carbon Development Act 2015, as amended.