Alexandra Basin Redevelopment 2

Bringing Dublin Port To 2040

Environmental Impact Assessment Report

Chapter 11 Climate

Volume 2



CALAFORT ÁTHA CLIATH
DUBLIN PORT

TETRA TECH

11 Climate

Chapter Contents

11 Climate 11-1
11.1 Introduction 11-2
11.2 Assessment Methodology 11-2
11.3 Existing Environment 11-24
11.4 Description of Likely Significant Effects 11-30
11.5 Inter-relationships 11-42
11.6 Mitigation and Monitoring 11-42
11.7 Potential Cumulative Effects 11-44
11.8 Residual Impacts 11-47
11.9 Summary of Effects and Conclusions 11-48
11.10 Limitations of Assessment 11-50
11.11 Obligations under section 15 of the 2015 Act 11-50

11.1 Introduction

This chapter of the EIAR comprises an appraisal of the existing climate conditions within the ABR2 Project study area and addresses the potential effects of the Project on climate, as well as the vulnerability of the Project to climatic factors. The assessment is based on the description of works as noted in **Chapter 5 Project Description**. Where potential adverse impacts are identified, the assessment identifies mitigation measures that will be implemented to prevent, reduce or offset potential adverse effects, or enhance potential beneficial effects where possible.

The assessment examines the potential impacts during the construction and operational phases of the ABR2 Project. The climate assessment comprises of two main elements, which include:

- A greenhouse gas (GHG) assessment, which assesses the impact of the ABR2 Project on climate through carbon emissions; and
- A climate change risk (CCR) assessment, which assesses the vulnerability of the ABR2 Project to future climate change.

The following sections detail the relevant guidelines, policy and legislation which drive the need for the climate assessment, as well as outlining the relevant criteria for assessing impacts to climate. The significance criteria for the GHG assessment and climate change vulnerability assessment are set out, and the methodology used to conduct the assessment is detailed in the following section.

In addition to considering and assessing the likely significant effects of the Project on climate for Environmental Impact Assessment (EIA) purposes, this chapter also addresses the most recent approved Climate Action Plan, namely the Climate Action Plan 2025 (which, as discussed further below, is to be read in conjunction with the Climate Action Plan 2024). It considers how the Project aligns with the Climate Action Plan 2025 and the Climate Action Plan 2024, and also with the other plans, strategies and objectives specified in section 15 of the Climate Action and Low Carbon Development Act 2015 (as amended) (the '2015 Act').

This report therefore also provides the information necessary for An Comision Pleanála (ACP) to be satisfied that, by granting approval for the Project, it would be discharging its obligations under section 15 of the 2015 Act and performing its functions, insofar as practicable, in a manner consistent with the Climate Action Plan 2025, the Climate Action Plan 2024, the most recent approved long term climate strategy, and the other plans and objectives specified in section 15.

11.2 Assessment Methodology

11.2.1 Legislative Context

11.2.1.1 International and European Legislation

The Paris Agreement was adopted in December 2015 under the United Nations Framework Convention on Climate Change (UNFCCC) and entered into force on 4th November 2016. The Parties to the Paris Agreement have agreed to hold the increase in the global average temperature well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

The European Green Deal is the EU's long-term growth strategy which aims to make Europe climate-neutral by 2050 and put renewable energy at the heart of the energy system. As part of the Green Deal, with the European Climate Law, the EU has set itself a binding target of achieving climate neutrality by 2050. As an intermediate step towards climate neutrality, the EU has raised its 2030 climate ambition, committing to cutting emissions by at least 55% by 2030. Further, the EU has revised its climate, energy, and transport-related legislation under the 'Fit for 55' package in order to align with the 2030 and 2050 ambitions.

The Fit for 55 Package comprises a set of revisions and updates to EU legislation and includes new initiatives with the overall aim of ensuring that EU policies are in line with the Council and the European Parliament's climate goals of reducing net GHG emissions by at least 55% by 2030.

In May 2018, the European Council adopted the EU Effort Sharing Regulation (ESR, Regulation (EU) 2018/842), which sets out 2030 targets for member states to reduce greenhouse gas (GHG) emissions. The starting point is an average of 2016 - 2018 emissions with binding emission reduction targets of 30% compared to 2005 levels. The ESR establishes binding annual greenhouse gas emission targets for Member States for the periods 2013–2020 and 2021–2030. These targets concern emissions from most sectors not included in the EU Emissions Trading System (ETS), such as transport, buildings, agriculture and waste.

The ESR forms part of a set of policies and measures on climate change and energy that will help move Europe towards a low-carbon economy and increase its energy security. Under the current Regulation, the national targets will collectively deliver a reduction of around 10% in total EU emissions from the sectors covered by 2020 and of 30% by 2030, compared with 2005 levels. The ESR, as amended in March 2023 by Regulation (EU) 2023/857, enshrines a GHG emissions reduction target for Ireland of 42% by 2030, relative to 2005 levels. This Amending Regulation has applied since May 2023 and contributes to the long-term target of climate neutrality in the EU at the latest by 2050, with the aim of achieving negative emissions thereafter and contributes to achieving the objectives of the Paris Agreement.

The European Climate Law, Regulation (EU) 2021/1119, sets a binding EU target of a net domestic reduction in GHG emissions by at least 55% (compared with 1990 levels) by 2030 and undertakes to set a climate target for 2040 within six months of the first global stocktaking under the Paris Agreement.

A key target for Ireland is the 42% reduction in GHG emissions which is required under the ESR. **Table 11-1** compares Ireland's ESR share with the broader EU-wide GHG emissions reduction targets. The latest projections from the EPA indicate that currently implemented measures (With Existing Measures, WEM) will achieve a reduction of 10% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the higher ambition (With Additional Measures, WAM) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 22% by 2030, also short of the 42% reduction target.

Table 11-1: Key Targets for GHG Emissions Reductions by 2030

By 2030	Previous Target (pre-Fit for 55 Package)	Current Target	Baseline Year
EU economy-wide target	40%	At least 55%	1990
EU ETS contribution	43%	62%	2005
EU ESR contribution	30%	40%	2005
Ireland's legally binding ESR target	30%	42%	2005

11.2.1.2 National Legislation

In relation to national climate legislation, the Climate Action and Low Carbon Development Act 2015, as amended ('the 2015 Act'), is the legislative instrument most relevant for assessment carried out in this chapter. Section 15 of the 2015 Act, as substituted by section 17 of the Climate Action and Low Carbon Development (Amendment) Act 2021, defines the duties of certain bodies under the 2015 Act, and provides that:

> *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 policy elements listed in section 15(1) is described in **Section 11.2.2.2**, with specific reference to the maritime transport and other sectors which are relevant to the Project.

As mentioned above, in addition to examining, analysing and evaluating the likely significant effects of the Project on climate for EIA purposes, this chapter also considers the manner in which ACP, as the relevant body, may perform its functions on the consideration and determination of the application for permission in respect of the Project, in a manner consistent with the matters specified in section 15(1) of the 2015 Act (in **Section 11.11**).

The 2015 Act provides for plans to be established on a statutory footing in relation to climate change to aid the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of 2050. In line with this objective, a national mitigation plan and national adaptation framework were required to be produced by the Minister to the Government for approval. Under the 2015 Act, Ireland has:

- Set economy-wide carbon budgets for the periods 2021-2025 and 2026-2030 as shown in **Table 11-2**.
- Established pathways to deliver the sectoral emission ceilings (SECs) as shown in **Table 11-3.**

The 2015 Act also sets out the national climate objective of achieving, by no later than 2050, the '*transition to a climate resilient, biodiversity-rich, environmentally sustainable, and climate-neutral economy*' on a statutory footing and requires the preparation of (i) a Climate Action Plan which is to be updated annually, and (ii), not less frequently than once every five years, a national long term climate action strategy.

Table 11-2: 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035 (Department of the Taoiseach, 2022)

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e (Provisional)	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 11-3: Sectoral Emission Ceilings 2030 (Government of Ireland, 2022)

Sector	Baseline (Mt CO_2e)	Sectoral Emissions Ceilings (Mt CO_2e)		2030 Emissions (Mt CO_2e)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Transport	12	54	37	6	50
Electricity	10	40	20	3	75
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Agriculture	23	106	96	17.25	25
Land Use, Land-use Change and Forestry (LULUCF)[1]	5	TBC	TBC	TBC	TBC
Industry	7	30	24	4	35
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Unallocated Savings	-	7	5	-5.25	-

Sector	Baseline ($MtCO_2e$)	Sectoral Emissions Ceilings ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Total	68	TBC	TBC	-	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

Note: 1. In the Sectoral Emissions Ceilings Report published by the Government in 2022, the Sectoral Emissions Ceiling for the Land-Use, Land-Use Change and Forestry (LULUCF) sector was not set out, and the report indicated that the finalisation of that sectoral emissions ceiling had been deferred.

In relation to carbon budgets, section 6A(1) of the 2015 Act provides that:

> '*A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Advisory Council, finalised by the Minister and approved by the Government for the period of five years commencing on 1 January 2021 and ending on 31 December 2025 and for each subsequent period of five years (in this Act referred to as a 'budget period')*'.

The carbon budget is to be produced for three sequential budget periods as shown in **Table 11-2** for the budgets approved in April 2022. Under section 6D of the 2015 Act, the carbon budget can be revised where new obligations are imposed under the law of the EU or certain international agreements, or where there are significant developments in scientific knowledge in relation to climate change.

In April 2025, the Department of Climate, Energy and the Environment (DCEE) began consultation on aspects of the Climate Change Advisory Council's (CCAC) latest recommendations for the Carbon Budget Period 3 (2031 – 2035, to replace the provisional budget set in 2022 shown in **Table 11-2**) and Period 4 (2036 – 2040).

The CCAC has published a proposal for the second programme of carbon budgets which is outlined in its Carbon Budget Proposal Report (CACC, 2024). In this report the CCAC recommend that for Carbon Budget 3 (2031–2035) a budget of 160 Mt CO_2e should apply (which is higher than the 152 Mt CO_2e in **Table 11-2**). In addition, the CCAC recommend a provisional Carbon Budget 4 (2036–2040) of 120 Mt CO_2e.

At the time of finalising this EIAR, carbon budgets have not been approved by the Government for Carbon Budget Period 3 (2031 – 2035) or Period 4 (2036 – 2040). However, for the purposes of this assessment, the budgets proposed by the CCAC have been used to assess impacts where relevant.

In relation to sectoral emissions ceiling, section 6C of the 2015 Act provides that the Minister for Climate, Energy, and the Environment shall prepare, within the limits of the carbon budget, the maximum amount of greenhouse gas emissions that are permitted in different sectors of the economy during a budget period (in the 2015 Act referred to as a 'sectoral emissions ceiling') and different ceilings may apply to different sectors. The Minister is required, as soon as may be after a carbon budget takes effect, to finalise and submit each sectoral emissions ceiling to the Government for approval. The sectorial emission ceilings for 2030 were agreed by the Government on 18th July 2022 and are shown in **Table 11-3.**

It should be noted that emissions associated with shipping outside of the State and are not included in the National Emissions Inventories reported by the EPA to the EU and are not bound by the carbon budget in **Table 11-2** or the transport sectoral emissions ceiling in **Table 11-3.**

11.2.2 Climate Policy

11.2.2.1 International and EU Policy

The **UN Framework Convention on Climate Change** (UNFCCC, 1992) was adopted with the objective of preventing '*dangerous anthropogenic interference with the climate system'* and the Paris Agreement (2015) established the long-term goals of '*holding the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels*' and of achieving a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century.

The **Intergovernmental Panel on Climate Change** (IPCC) 6th Assessment Report which was completed in 2023 provides a clear message on the scale and pace of climate action required to avoid the worst impacts of climate change. '*Deep, rapid and sustained mitigation and accelerated implementation of adaptation actions in this decade would reduce projected losses and damages for humans and ecosystems, and deliver many co-benefits, especially for air quality and health'*.

The European Union **Technical Guidance on Climate Proofing of Infrastructure in the period 2021-2027** (2021) provides guidance on the climate proofing of investments in network infrastructure and physical assets covering the programming period 2021-2027. Climate proofing is a process that integrates climate change mitigation and adaptation measures into the development of infrastructure projects. This guidance says that infrastructure investments should be aligned with the goals of the Paris Agreement and a credible pathway of GHG emission reduction consistent with the EU 2030 climate targets and climate neutrality by 2050 and climate resilient development.

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.

In January 2024, the **EU Emissions Trading System** (EU ETS) was extended to cover CO_2e emissions from all large ships entering EU ports, regardless of the flag they fly. Offshore ships of or above 5000 GT will be included from 1 January 2027. 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 ETS covers CO_2 (carbon dioxide), CH_4 (methane) and N_2O (nitrous oxide) emissions. 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 **International Maritime Organization (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.

11.2.2.2 National Policy

The **National Policy Position on Climate Action and Low Carbon Development** (2014) recognises the threat of climate change for humanity; anticipates and supports mobilisation of a comprehensive international response to climate change, and global transition to a low-carbon future; recognises the challenges and opportunities of the broad transition agenda for society; and aims, as a fundamental national objective, to achieve transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050.

Ireland's **National Climate Objective**, established in law by the Climate Action and Low Carbon Development (Amendment) Act 2021, is to achieve a climate neutral economy by no later than the end of the year 2050. The 2021 Act also provides for an interim 51% reduction in emissions, relative to 2018 levels, by 2030 - in line with the European Climate Law and with the IPCC's 1.5°C pathway. The 2030 and 2050 targets are to take account of all greenhouse gases included in the common reporting format tables submitted by the Environmental Protection Agency (EPA) under the United Nations reporting guidelines.

The first **Climate Action Plan 2019** (CAP19) was formulated on a non-statutory basis and set out many measures, key objectives, and targets to address the climate change agenda. There have since been a number of updates since the 2019 plan – the first was **Climate Action Plan 2021** (CAP21) which set out a wide range of policies aimed at decarbonisation in relation to the particular sectors of the economy.

Climate Action Plan 2023 *(*CAP23) was launched in December 2022 as the first national climate plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021 and following the introduction of carbon budgets and sectoral emissions ceilings in 2022. CAP23 implements the carbon budgets and sectoral emissions ceilings and sets a roadmap for taking decisive action to halve national emissions by 2030 and reach net zero no later than 2050.

The actions and targets of CAP23 have been continued or supplemented with further actions in **Climate Action Plan 2024** (CAP24) and **Climate Action Plan 2025** (CAP25). CAP25 states (on page 20) that:

> '*In contrast to previous iterations of the Climate Action Plan, CAP25 is to be read in conjunction with CAP24 and takes account of key developments in the policy and evidence base in the previous year*

while setting out a range of new actions in response to the latest data. This is intended to facilitate a focus on the delivery of outstanding actions from CAP24 and high-impact legacy actions from CAP23.'

Therefore, CAP25 should be read in conjunction with CAP24 and CAP23. The relevant actions and targets from these Climate Action Plans are presented in the following paragraphs.

Chapter 12 of CAP25 relates to industry and while not directly applicable to port development, there are targets of relevance in relation to the construction phase, including the following national targets for reducing embodied carbon in construction materials which are also referenced in CAP24/CAP23:

> *National Target: Decrease embodied carbon in construction materials.*
>
> *2025: Decrease by 10% embodied carbon for materials produced and used in Ireland.*
>
> *2030: Decrease by at least 30% embodied carbon for materials produced and used in Ireland.*

While these indicators are placed on the industrial sector, DPC can support delivery through ensuring procurement of these materials on all construction projects as per the *Public Sector Climate Action Mandate in Appendix 1 of CAP25.* This mandate includes a commitment to play a leadership role in driving far-reaching climate action across its buildings, transport, waste, and energy usage as well as wider society. A requirement for the public sector of relevance to this project is listed as follows:

> *3.5.1. Specify low carbon construction methods and low carbon cement material as far as practicable as per guidance issued by Department of Enterprise, Trade and Employment for directly procured or supported construction projects from 2024.*

DPC gives this commitment to using low carbon construction methods and low carbon cement material as far as practicable. The above policy elements are specifically relevant to the construction phase of the Project and are directly supported by the Project for the reasons discussed in **Section 11.11** below.

From the 1st September 2024, all new public projects in Ireland must adhere to newly introduced **procurement guidance to promote the reduction of embodied carbon in construction**. These guidelines mandate a minimum of 30% clinker substitution in concrete products used in government and public works projects (consistent with IS EN 206). Also, DPC, as a public body, shall seek an Environmental Product Declaration, to an EN 15804 standard, or equivalent, when directly procuring cement or concrete products.

Chapter 14 of CAP25 addresses transport emissions and while the focus is on road transport, there are policies and notes of direct relevance to this Project. CAP25 acknowledges that ports are key to national connectivity as an island nation and act as key strategic delivery partners for other sectoral decarbonisation plans.

The Alternative Fuels Infrastructure regulation and the FuelEU Maritime regulations will require the development of on-shore electricity supply in Irish TEN-T ports and the increased take-up of renewable maritime fuels in larger vessels.

CAP25 notes that the planned update to the National Ports Policy will recognise and facilitate the role of ports in enabling future energy transitions, including the decarbonisation of shipping and of the wider logistics chain

to encourage improved and greater integration of rail transport with our seaports, and facilitating the development of offshore renewable energy.

The only listed action for maritime transport in Chapter 14 is as follows:

> *TR/25/13 Review of the National Ports Policy to set a policy framework to contribute to the decarbonisation of maritime transport and the wider logistics chain and to support the development of Offshore Renewable Energy (ORE).*

Ireland's current **Long-term Strategy on Greenhouse Gas Emissions Reductions**[1] sets out indicative pathways, beyond 2030, towards achieving carbon neutrality for Ireland by 2050. The Strategy builds upon the decarbonisation pathways set by the carbon budgets, sectoral emissions ceilings, and CAP23/CAP24/CAP25, to ensure coherent and effective climate policy.

It is underpinned by analysis of transition options across each key sector of the economy and provides a crucial link between Ireland's 2030 climate targets and the long-term goal set by Ireland's National Climate Objective and the European Climate Law. In relation to shipping and under the theme of transport, the Strategy notes the following:

> *As a small open economy on the periphery of Europe, the aviation and maritime sectors are critical for the movement of our goods and people. Action is being taken at EU and international levels to address emissions from these sectors, including through market-based measures such as the EU ETS and sustainable fuel mandating initiatives (through ReFuel EU Aviation, Fuel EU Maritime, and the Alternative Fuel Infrastructure Regulation, which will all include binding targets once adopted).*
>
> *Continued international collaboration through the International Maritime Organization and the International Civil Aviation Organization, will be key to achieving greater sustainability and preserving a level playing field in these global sectors. Ireland will support appropriate actions taken at EU and global levels to reduce emissions from the aviation and maritime sectors.*

In terms of addressing Emission Reduction Measures and Milestones to 2050 for shipping, the Strategy notes the following:

> *The 2018 International Maritime Organisation (IMO) strategy on the reduction of greenhouse gas emissions from ships has the objective of reducing emissions by 50% by 2050 compared to 2008 while pursuing efforts to achieve full decarbonisation as soon as possible in this century.*
>
> *The IMO strategy envisages the adoption of measures and incentives to encourage further development and use of low and zero carbon fuels in shipping, including a combination of bioenergy and renewable fuels, hydrogen and its derivatives. Research and development of these alternatives fuels will require international collaboration requiring significant investments over the coming decades and Ireland will actively contribute to*

[1] https://www.gov.ie/en/publication/e4e81-long-term-strategy-on-greenhouse-gas-emissions-reductions/#:~:text=The%20Long%2Dterm%20Strategy%20covers,enhancements%20of%20removals%20by%20sinks

this agenda, including through a supportive research infrastructure where relevant. The initial IMO strategy envisaged that a revised strategy would be adopted in 2023.

In summary, the Long-term Strategy on Greenhouse Gas Emissions Reductions has established that the strategy for shipping emissions is to implement and comply with EU regulations and the IMO strategy on the reduction of greenhouse gas emissions. There are no national or port-specific policies that must be adopted for the Project outside the EU and IMO requirements.

First published in 2018, the **National Adaptation Framework (NAF)** contained Ireland's strategy for the application of climate adaptation measures to reduce the vulnerability of the State to the negative effects of climate change, and to seek opportunities for any positive effects that may occur. In 2024 an updated NAF was published based on a review of the 2018 NAF and sets out to expand on the guiding principles that promote smarter, faster and transformative adaptation actions. The actions of the NAF foster the development and use of appropriate adaptation/resilience indicators to create a fit-for-purpose MERL (Monitoring, Evaluation, Research and Learning) system and encourage data sharing for adaptation monitoring.

In 2025, the **Transport Sectoral Adaptation Plan 2025-2030 (T-SAP II)** was published by the Department of Transport. This plan identifies the key vulnerabilities in the transport network and looks to promote greater resilience to safeguard its continued operation. The overarching goal of T-SAP II is building long-term resilience across all transport modes in Ireland by adapting to current and future climate conditions to minimise negative impacts on transport services and infrastructure and reduce their consequences. This will enable the transport sector to continue fulfilling its economic, social and environmental objectives. This goal is delivered through a framework of three objectives and actions with those relevant to the Project listed below.

T-SAP II Objectives

Objective 3: Ensure that resilience to weather extremes and longer-term adaptation needs are taken into account in investment programmes for asset management of existing, as well as planned future transport infrastructure.

Actions for Maritime Transport

P1: Incorporate climate adaptation into masterplanning for ports.

P2: Establish a climate adaptation forum for ports in Ireland.

P3: Coordinate port strategies for handling extreme weather events.

P4: Explore mechanisms to access dredgers in emergency situations.

P5: Review and update the licensing process for dredging.

The **National Climate Change Risk Assessment (NCCRA)** was published by the EPA in 2025 to provide a comprehensive national overview of the potential risks and opportunities posed by climate change for Ireland. The NCCRA integrates scientific and technical knowledge with input from expert stakeholders, to identify, assess, and prioritise climate change risks to build a comprehensive understanding of risks. Some of the key risks identified in the NCCRA with relevance to the Project include:

- Coastal areas are at risk from sea level rise, coastal erosion, and coastal flooding, causing damage and requiring relocation of assets;
- Extreme precipitation and flooding pose risks to transport infrastructure, causing delays, diversions, and closures;
- Floodwaters can erode foundations, wash away road surfaces, and cause bridge collapses; and
- Extreme heat impacts roads, railways, and airports, causing deformation and requiring frequent maintenance.

These key risks have been considered in the CCR assessment of the Project in **Section 11.4.4**.

11.2.2.3 Local Climate Policy

The Dublin City Development Plan 2022-2028 sets out the policies and objectives and the overall strategy for the development of the city to 2028. The aim of the plan is to improve the quality of life for its citizens and make sure that Dublin City is an attractive place to live, work and visit. The plan has sixteen key chapters covering the many aspects of development with a high level of integration and interdependency across themes, particularly climate action. The main strategic approach of the plan is to develop a city that is:

- Low Carbon;
- Sustainable; and
- Climate Resilient (the capability to anticipate, plan for, respond to and recover from significant hazardous events such as floods with minimum damage to social wellbeing, the economy, and the environment).

Chapter 3 (Climate Action) of the plan outlines the Council's policy response for climate action whilst also acknowledging an overall strategic approach to climate action involving all parts of the plan including ways to manage and adapt to climate change. This will make sure that Dublin becomes a low-carbon, climate-resilient city.

The following policies of relevance are extracted from chapter three Climate Action (CA):

CA1 National Climate Action Policy

To support the implementation of national objectives on climate change including the 'Climate Action Plan 2021: Securing Our Future' (including any subsequent updates to or replacement thereof), the 'National Adaptation Framework' 2018 and the 'National Energy and Climate Plan for Ireland 2021-2030' and other relevant policy and legislation.

CA2 Mitigation and Adaptation

To prioritise and implement measures to address climate change by way of both effective mitigation and adaptation responses in accordance with available guidance and best practice.

CA3: Climate Resilient Settlement Patterns, Urban Forms and Mobility

It is the policy of Dublin City Council to support the transition to a low carbon, climate resilient city by seeking sustainable settlement patterns, urban forms and mobility in accordance with the National Planning Framework 2018 and the Regional Spatial and Economic Strategy 2019.

CA4: Improving Mobility Links in Existing Areas

It is the policy of Dublin City Council to support retrofitting of existing built-up areas with measures which will contribute to their meeting the objective of a low-carbon city, such as reopening closed walking and cycling links or providing new links between existing areas.

CA5: Climate Mitigation and Adaptation in Strategic Growth Areas

It is the policy of Dublin City Council to ensure that all new development including in Strategic Development and Regeneration Areas integrate appropriate climate mitigation and adaptation measures. See also Section 15.4.3. Sustainability and Climate Action and Section 15.7.3 Climate Action and Energy Statement.

CA8: Climate Mitigation Actions in the Built Environment

It is the policy of Dublin City Council to require low carbon development in the city which will seek to reduce carbon dioxide emissions, and which will meet the highest feasible environmental standards during construction and occupation. New development should generally demonstrate/ provide for:

a. building layout and design which maximises daylight, natural ventilation, active transport, and public transport use.

b. sustainable building/services/site design to maximise energy efficiency.

c. sensitive energy efficiency improvements to existing buildings.

d. energy efficiency, energy conservation, and the increased use of renewable energy in existing and new developments.

e. on-site renewable energy infrastructure and renewable energy.

f. minimising the generation of site and construction waste and maximising reuse or recycling.

g. the use of construction materials that have low to zero embodied energy and CO_2 emissions.

h. connection to (existing and planned) decentralised energy networks including the Dublin District Heating System where feasible.

CA9: Climate Adaptation Actions in the Built Environment

It is the policy of Dublin City Council that Development proposals must demonstrate sustainable, climate adaptation, circular design principles for new buildings / services / site. The council will promote and support development which is resilient to climate change. This would include:

a. measures such as green roofs and green walls to reduce internal overheating and the urban heat island effect.

b. ensuring the efficient use of natural resources (including water) and making the most of natural systems both within and around buildings.

c. minimising pollution by reducing surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems (SuDS).

d. reducing flood risk, damage to property from extreme events– residential, public and commercial.

e. reducing risks from temperature extremes and extreme weather events to critical infrastructure such as roads, communication networks, the water/drainage network, and energy supply.

f. promoting, developing and protecting biodiversity, novel urban ecosystems and green infrastructure.

CA19: Decarbonising Zones

It is the policy of Dublin City Council to support, encourage and facilitate the specific polices and projects identified in the Decarbonisation Zone of Ringsend/Irishtown in order to address local low carbon energy, greenhouse gas emissions and climate needs and commit to establishing Decarbonising Zones in each LEA (Local Electoral Area) within the lifetime of this plan, with a view to designating all of Dublin City as a decarbonised zone by the end of this Development Plan.

CA26: Flood and Water Resource Resilience

It is the policy of Dublin City Council to support, encourage and facilitate the delivery of soft, green and grey adaptation measures to enhance flood and water resource resilience in the city and support the delivery of grey adaptation measures to enhance flood and water resource resilience where necessary.

CA27: Flood Risk Assessment and Adaptation

It is the policy of Dublin City Council to address flood risk at strategic level through the process of Strategic Flood Risk Assessment, and through improvements to the city's flood defences.

CA28: Natural Flood Risk Mitigation

It is the policy of Dublin City Council to encourage the use natural flood risk mitigation or nature-based solutions including integrated wetlands, green infrastructure, and Sustainable Drainage Systems (SuDS) as part of wider adaptation and mitigation responses to achieve flood resilience.

CA29: Climate Action and Green Infrastructure

It is the policy of Dublin City Council to protect, connect and expand the city's Green Infrastructure while optimising the climate change adaptation and mitigation services it provides.

CA30: Coastal Zone Management

It is the policy of Dublin City Council to support, encourage and facilitate coastal zone management measures for adapting to climate change which include restoration of degraded ecosystems, increased flood resilience, water quality improvement, habitat conservation and provision of amenities for the residents and visitors of Dublin City.

Chapter Nine: Sustainable Environmental Infrastructure and Flood Risk – outlines the manner in which the integration of land-use planning with infrastructure delivery is essential to achieving sustainable development. The policies and objectives in Chapter Nine of the Development Plan address a broad range of supporting infrastructure and services, providing for improvements in water quality and water services, sustainable waste

management, greater energy security and efficiency, enhanced digital connectivity, and a more holistic and nature-based approach to flood risk and surface water management, all while safeguarding environmental quality and providing for climatic resilience.

Policies relating to Flood Management in Chapter Nine Sustainable Environmental Infrastructure (SI) include:

> ***SI13: Minimising Flood Risk***
>
> *It is the Policy of Dublin City Council to minimise the flood risk in Dublin City from (all other) sources of flooding as far as is practicable, including fluvial, coastal, reservoirs and dams, the piped water system, and potential climate change impacts.*
>
> ***SI14: Strategic Flood Risk Assessment***
>
> *To implement and comply fully with the recommendations of the Strategic Flood Risk Assessment prepared as part of the Dublin City Development Plan 2022-2028, including all measures to mitigate identified climate change and flood risks, including those recommended under Part 3 (Specific Flood Risk Assessment) of the Justification Tests, and to have regard to the Flood Risk Management Guidelines (2009), as revised by Circular PL 2/2014, when assessing planning applications and in the preparation of statutory and non-statutory plans.*
>
> ***SI15: Site-Specific Flood Risk Assessment***
>
> *All development proposals shall carry out, to an appropriate level of detail, a Site-Specific Flood Risk Assessment (SSFRA).*

In March 2024, Dublin City Council (DCC) adopted a local authority climate action plan '**Climate Neutral Dublin 2030**', as required pursuant to Section 16 of the Climate Action and Low Carbon Development (Amendment) Act 2021. The plan sets out the actions that DCC will take to prepare for the known impacts of climate change – flooding, sea level rise, extreme weather events and drought. The plan sets out the manner in which DCC will mitigate greenhouse gas emissions and contribute the global effort to limit warming to below 1.5°C. The plan has three targets that are interdependent:

> *A 51% reduction in greenhouse gas emissions in line with our National Climate Objective by 2030, while striving for neutrality before 2050 as per Dublin City's participation in the EU Mission for 100 Climate Neutral and Smart Cities (Net Zero Cities);*
>
> *A Climate Resilient City prepared for the known and unknown impacts of climate change; and*
>
> *A Just Transition meaning that the actions we take do not cause harm.*

There are no specific actions or policies listed within the plan or in relation to the decarbonisation zone in relation to port activities, shipping or freight transport. This assessment will have due regard to the requirements of the Climate Neutral Dublin 2030 policies.

11.2.2.4 Dublin Port Masterplan

The Dublin Port Masterplan 2040 was first published in 2012 and most recently reviewed in 2018. The 2018 revision notes Dublin Port needs to be developed on the basis of an average annual volume growth of 3.3% over the 30 years from 2010 to 2040 rather than the 2.5% originally assumed in 2012.

Mitigation measures to guide development at the port have been included in the Masterplan and those relevant to this project are listed as follows:

> ***Impact 20 - Medium- and long-term sustainability impacts.***
>
> *Potential to reduce GHG emissions with greater rail transport to and from Dublin Port, increase car sharing, initiate shore-side electricity at new berths to reduce diesel emissions, provide pedestrian and cycle links within Dublin Port, improve public transport connections to the Port estate etc. Continued monitoring by DPC of total CO_2 emissions and energy performance at Dublin Port.*
>
> *DPC to commit to contributing to the relevant goals, targets, and indicators of The Sustainable Development Goals National Implementation Plan 2018 – 2020, in particular - Goal 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development. (e.g., 14.1, 14.2 and 14.a)*
>
> ***Impact 21 - Adaptation to potential climatic change.***
>
> *Individual developments to be subject to detailed Flood Risk Assessment at the planning application stage. Future port development will be designed for climate change, reducing risk to assets at the Port. DPC to develop a Climate Change Adaptation Plan.*

11.2.3 Guidance

This section describes the methodology which has been used in the assessment of climate, which may impact or be impacted by the Project. The methodology and associated impact assessment had regard to the general guidance for the undertaking of an EIA as outlined in **Chapter 1 Introduction**.

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

- European Commission Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (2017);
- Government of Ireland's Climate Action Plan 2025;
- 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 (now ISEP (ISEP - The Institute of Sustainability and Environmental Professionals);
- 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) (now ISEP (ISEP - The Institute of Sustainability and Environmental Professionals).

Transport Infrastructure Ireland (TII) have used these international and EU standards to devise national climate impact assessment guidance for national roads, light rail and greenways. Where applicable, the following TII guidance has been applied to this assessment:

- TII Climate Guidance for National Roads, Light Rail, and Rural Cycleways (Offline and Greenways) – Overarching Technical Document PE-ENV-01104 (December 2022);
- TII Climate Assessment of Proposed National Road Projects – Standard PE-ENV-01105 (December 2022);
- TII Carbon Tool for Road, Greenway and Light Rail Projects: User Guidance Document GE-ENV-01106 (September 2025); and
- TII Road Emissions Model (REM): Model Development Report GE-ENV-01107 (May 2025).

As per the EU Directive, the TII approach requires that the climate impact assessment must report the project's impact on greenhouse gas emissions and the project's 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.

11.2.4 Study Area

The study area for this assessment is the North Estate of Dublin Port and specifically the areas of:

- **Alexandra Basin West:** Completion of dredging within Alexandra Basin West, with dredging of the contaminated material to a depth of -10m CD over an area within the redeveloped Alexandra Basin West and its subsequent remediation.
- **Berth 52/53 Basin:** Infilling of the Berth 52/53 (Terminal 5) basin and the raising of existing levels by 1.4m for delivery of the Unified Ferry Terminal.

The wider Zone of Influence (ZoI) for climate includes the national environment, where the receptor is the climate and the global atmosphere. Effects arising from the construction phase and operational phase are considered to impact on a national level. Carbon dioxide equivalent (CO_2e) emissions have a global climate warming effect, regardless of their rate of release, location, or the weather when released into the atmosphere, and unlike pollutants that affect local air quality where the rate of release, location, and prevailing weather, as well as the amount of pollutant, determines the local concentrations and the impact.

Local ambient concentrations of CO_2e are not relevant to this assessment as there are no limits or thresholds that can be applied to particular sources of carbon emissions (such as for air quality). Any amount of CO_2e released into the atmosphere will contribute to climate warming, the extent of which is determined by the magnitude of the release. Although CO_2e emissions are typically expressed as kilograms or tonnes per year, there is a cumulative effect of these emissions because CO_2e emissions have a warming effect which lasts for 100 years or more.

11.2.5 Baseline

This analysis was undertaken by means of assessment based on available relevant guidance and information sources and the design team and other chapters of this EIAR. The following information sources have been consulted in relation to the assessment:

- EPA Emissions Inventories and Projections (https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/);
- Met Éireann TRANSLATE: One Climate Resource for Ireland (https://www.met.ie/science/translate); and
- Climate Data Tool from Climate Ireland (https://www.climateireland.ie/#!/tools/climateDataExplorer).

Table 11-4 outlines the existing studies, datasets and information used to inform the assessment on climate. The baseline climate represents the existing climate GHG emissions from within the ZoI and data is derived from national or local validated inventory data from Met Éireann and the EPA. No site-specific baseline surveys were undertaken as part of the assessment for climate given that local ambient concentrations of CO_2e are not relevant to assessing significance, as noted earlier, and the abundance of validated climate inventory data using standardised measurement protocols. The baseline data presented in this section is derived from EPA inventories and projections, and the Met Éireann monitoring network, and is representative of the existing baseline conditions.

Table 11-4: Summary of Key Desktop Data Sources for Climate.

Title	Source	Year
Ireland's Final Greenhouse Gas Emissions 1990-2024	EPA	2025
Ireland's Greenhouse Gas Emissions Projections 2024-2055	EPA	2025
30 Year Averages: Dublin Airport	Met Éireann	2022
Climatological Note No. 14: A Summary of Climate Averages for Ireland 1981-2010	Met Éireann	2012
National Climate Change Risk Assessment (NCCRA).	EPA	2025

11.2.6 Consultation

Following completion of the EIA Scoping Report, consultation was undertaken regarding the Project's potential to give rise to significant effects on Climate. Dublin City Council advised that the EIAR, including the various assessments and studies take account of the policies and objectives of the Dublin City Development Plan 2022-2028, and these have been considered in this climate assessment.

11.2.7 Assessment Criteria and Significance

Determining the significance of effects is a process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors.

11.2.7.1 GHG Emissions 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 11-5** and are employed in this assessment.

It is noted that the TII guidance does not differentiate between the assessment criteria presented for the construction phase (e.g. 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 but these ceilings do not relate to construction activities. A CAP25 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.

Table 11-5: TII Significance Matrix for the GHG Assessment

Effects and Magnitude of impact	Description
Significant Adverse Major Adverse impact	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.
Significant Adverse Moderate Adverse impact	The project's GHG impacts are partially mitigated; The project has partially complied with do-minimum standards set through regulation, and has 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 impact	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.
Not significant Negligible impact	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 impact	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.

11.2.7.2 CCR Assessment Criteria

The CCR assessment is based on the methodology proposed by the Institute of Environmental Management and Assessment (IEMA, 2020, now ISEP (ISEP - The Institute of Sustainability and Environmental Professionals): Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation (2nd Edition).

The CCR assessment is undertaken in two phases, with an initial climate screening phase followed by a more detailed analysis. The detailed analysis is subject to the outcome of the screening phase, which helps ensure that the cost and effort associated with climate proofing is proportional to the benefits. The climate screening is intended to provide an indication of the vulnerability to climate change during the construction and operational phase of the project. The screening is broken down into three steps:

1) Sensitivity analysis;

2) Exposure analysis; and

3) Vulnerability assessment.

11.2.7.2.1 Sensitivity Analysis

To undertake the sensitivity analysis, a score is applied for each asset category against each climate hazard (flooding, extreme temperature, etc.), providing the definitions and scoring used when assessing sensitivity. The scale of intensity is illustrated in **Table 11-6**.

Table 11-6: Sensitivity Definition and Scoring

Level	Definition	Scoring
High sensitivity	The climate hazard will or is likely to have a major impact on the asset category.	3
Medium sensitivity	It is possible or likely the climate hazard will have a moderate impact on the asset category.	2
Low sensitivity	It is possible the climate hazard will have a low or negligible impact on the asset category.	1

11.2.7.2.2 Exposure Analysis

The aim of the exposure analysis is to identify which climate hazards are relevant to the location. For example, coastal flooding could represent a significant hazard for works within a port. Therefore, whilst sensitivity analysis focuses on the type of works, exposure focuses on location. The hazards assessed are the same as those used for the sensitivity analysis. To undertake the exposure analysis, an exposure score is applied for each climate hazard at the location. The allocation of exposure level is informed by the high-level climate data collected. **Table 11-7** shows the exposure definitions and scoring.

Table 11-7: Exposure Definition and Scoring

Level	Definition	Scoring
High exposure	It is almost certain or likely this climate hazard will occur at the location i.e., might arise once to several times per year.	3
Medium exposure	It is possible this climate hazard will occur at the location i.e., might arise several times in a decade.	2
Low exposure	It is unlikely or rare this climate hazard will occur at the location i.e., might arise a number of times in a generation or in a lifetime.	1

11.2.7.2.3 Vulnerability Assessment

The vulnerability assessment combines the outcomes of the sensitivity and exposure analysis with the aim of identifying the key vulnerabilities and the potentially significant climate hazards associated with the works. To complete the vulnerability assessment, the product of sensitivity and exposure for each climate hazard and each asset category is identified and mapped as per **Table 11-8**.

Table 11-8: Vulnerability Matrix

Sensitivity		Exposure		
		Low (1)	Medium (2)	High (3)
	Low (1)	1	2	3
	Medium (2)	2	4	6
	High (3)	3	6	9

Any high vulnerabilities (score >5) are then subjected to the second stage - a climate risk assessment using a combination of likelihood analysis and impact analysis. The impact analysis investigates the consequences of the climate hazards and refers to the severity and magnitude. **Table 11-9** provides guidance for ranking the risk areas. This table was sourced from the European Commission (2021) Technical Guidance on the Climate-proofing of Infrastructure in the Period 2021-2027.

Table 11-9: Consequence Analysis Key

Risk areas	Insignificant	Minor	Moderate	Major	Catastrophic
Asset damage, engineering, operational	Impact can be absorbed through normal activity	Adverse event that can be absorbed by taking business continuity actions	A serious event that requires additional emergency business continuity actions	A critical event that requires extraordinary / emergency business continuity action	Disaster with the potential to lead to shut down or collapse or loss of the asset / network
Health and safety	First aid case	Minor injury, medical treatment	Serious injury or lost work	Major or multiple injuries, permanent injury, or disability	Single or multiple fatalities
Environment	No impact on baseline environment. Localised in the source area. No recovery required	Localised within site boundaries. Recovery measurable within one month of impact	Moderate harm with possible wider effect Recovery in one year	Significant harm with local effect. Recovery longer than one year. Failure to comply with environmental regulations / consent	Significant harm with widespread effect. Recovery longer than one year. Limited prospect of full recovery
Social	No negative social impact	Localised, temporary social impacts	Localised, long-term social impacts	Failure to protect poor or vulnerable groups. National, long- term social impacts	Loss of social license to operate. Community protests
Financial	x % internal rate of return (IRR) < 2% of turnover	x % IRR 2-10% of turnover	x % IRR 10-25% of turnover	x % IRR 25-50% of turnover	x % IRR > 50% of turnover

Risk areas	Insignificant	Minor	Moderate	Major	Catastrophic
Reputational	Localised, temporary impact on public opinion	Localised, short-term impact on public opinion	Local, long-term impact on public opinion with adverse local media coverage	National, short- term impact on public opinion. negative national media coverage	National, long-term impact with potential to affect the stability of the government
Cultural Heritage and cultural premises	Insignificant impact	Short-term impact. Possible recovery or repair	Serious damage with a wider impact to tourism industry	Significant damage with national and international impact	Permanent loss with resulting impact on society

Table 11-10 presents summary outcome of the assessment of likelihood and consequence of each climate hazard in the form of a climate risk matrix. Hazards classified as above high are considered significant in terms of risk. Following the assessment of the initial risk rating, is an assessment of which risks are of significance to the project. This process is a simple binary assessment that indicates if the risk is 'Significant' or 'Not Significant', the allocation of which determines the priority given to that risk in the next step of the assessment. The risk framework and the risk ratings allocated can be used to determine significance. It is recommended that risk rating levels e.g., 'Low', 'Medium', 'High', 'Extreme' are denoted as either 'Significant' or 'Not Significant', and that each risk is allocated a significance rating depending on its highest initial risk rating. In the example provided below 'Low' and 'Medium' have been defined as 'Not Significant' whilst, 'High' and 'Extreme' have been defined as 'Significant'. The criteria on significance is consultation with TII as this could vary between projects and will depend on the risk framework adopted for the assessment. All risks defined as 'Significant' should be given priority in the next phase of the assessment i.e. the identification of adaptation measures. The intention is to increase the resilience of the asset and reduce the number of risks classified as 'Significant'. With regards to the next stage of the climate assessment, the EU Technical Guidance (2021) notes that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed.

Table 11-10: Climate Risk Matrix

Likelihood	Magnitude of Consequence					
		Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
	Rare	Low	Low	Medium	High	Extreme
	Unlikely	Low	Medium	Medium	High	Extreme
	Moderate	Low	High	High	Extreme	Extreme
	Likely	Medium	High	High	Extreme	Extreme
	Almost Certain	High	High	Extreme	Extreme	Extreme

11.2.8 Key Parameters for Assessment

As per the EU Directive, the climate impact assessment must report the project impact on GHG emissions and the project risk and resilience to climate change through a climate assessment through the following separate assessments:

- **GHG assessment** – direct construction and operational (maintenance) phase emissions from the Project in respect of dredging and infilling and indirect operational effects from road traffic and shipping;
- **Climate Change Risk (CCR) Assessment –** resilience of the construction and operation phases of the Project to future climate change.

The GHG assessment has been undertaken in respect of both the construction and operational (maintenance) phases of the Project 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.

Given the Project supports the delivery of infrastructure under the Dublin Port Masterplan 2040, there is potential for wider indirect emissions from operational road transport of freight/passengers to and from the port and this has been addressed through reference to previous assessments undertaken in the EIAR for the ABR and MP2 projects where the cumulative traffic impact of the Masterplan has been addressed.

Similarly, the Masterplan will alter the number and type of vessels accessing the port resulting in potential for indirect shipping emissions associated with the operation phase of the Project. Again, this has been addressed through reference to previous assessments undertaken in the EIAR for the ABR and MP2 projects where the cumulative impact of maritime transport under the Masterplan has been addressed.

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 Project and develop the Project's resilience to climate change.

11.3 Existing Environment

11.3.1 Receiving Environment

11.3.1.1 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 (1991-2020) average meteorological data from Met Éireann. The nearest Met Éireann meteorological station in terms of 30-year averages for climate and weather data, which would be representative of the climate in the vicinity, is the station situated at Dublin Airport, which lies approximately 10km north of the port. The 30-year average meteorological data from the station at

Dublin Airport is presented for each of the past three 30-year average periods in **Table 11-11**. The data shows limited variation for temperature, humidity, and sunshine, but there is a trend of increasing rainfall (circa 5% increase) and average wind speed (circa 6% increase) in the period 1991-2020 relative to 1961-1990.

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

Parameter	30-Year Average			
	1961-1990	1971-2000	1981-2010	1991-2020
Mean Temperature (°C)	9.6	9.8	9.8	9.7
Mean Relative Humidity at 09.00 UTC (%)	82	82.4	83	83.5
Mean Daily Sunshine Duration (Hours	3.9	3.9	3.9	4
Mean Annual Total Rainfall (mm)	732.7	734.7	758	772.5
Mean Wind Speed (knots)	9.9	10	10.3	10.5

11.3.2 National Emissions

GHG in the atmosphere are rising as a result of human activity, largely emanating from the agricultural, transport, energy and residential sectors. The main sources of GHG in the vicinity of the Project and nationally 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 provisional Greenhouse Gas Emissions 1990-2024 report, provisional estimates of emissions in 2024 are estimated to be 53.75 million tonnes carbon dioxide equivalent (Mt CO_2e) which is 2.0% lower (or 1.09 Mt) than the validated emissions in 2023 (54.85 Mt) and follows a 6.8% decrease in emissions reported for 2023. Emissions in 2024 are 3.6% lower than the historical 1990 baseline.

Ireland is not currently in compliance with the EU's Effort Sharing Regulation (ESR) in 2024 or cumulatively from 2021-2024. While, since 2005 ESR emissions have decreased by 10.9% or 5.2 Mt CO_2e, same is considerably short of Ireland's 42% reduction commitment by 2030.

Provisional estimates of national greenhouse gas emissions in 2024 are 12.0% below 2018, well off the National Climate objective of a 51% reduction by 2030. The data indicates that from 2021-2024, Ireland has used 82.5% (243.3 Mt) of the 295 Mt Carbon Budget for the five-year period 2021-2025. A reduction of 10.3% in national emissions is now required in 2025 to stay within budget.

The sectoral breakdown of the 2021 and 2024 GHG emissions is shown in **Table 11-12**. The sector with the highest emissions was agriculture followed by transport and electricity.

[2] https://www.met.ie/climate/30-year-averages

Table 11-12: National and Sectoral GHG Emission Changes 2021 to 2024

Sector	2021 (Mt CO_2e)	2022 (Mt CO_2e)	2023 (Mt CO_2e)	2024 (Mt CO_2e)
Agriculture	22.0	21.8	20.8	20.4
Buildings (Commercial and Public)	1.4	1.4	1.4	1.5
Buildings (Residential)	6.9	5.8	5.4	5.6
Electricity	9.9	9.7	7.6	6.9
Industry	7.1	6.7	6.3	6.0
Other	1.8	1.8	1.7	1.6
Transport	11.1	11.8	11.8	11.7
Total	**60**	**59**	**55**	**54**

Figure 11-1 illustrates the total GHG emissions from the transport sector in Ireland between 1990 and 2024. The graph shows that the sector emissions are dominated by road transport. Emissions have risen sharply from 1990 to a peak in 2007 with strong economic growth followed by a sharp fall through the economic downturn.

Emissions were relatively stable for the period 2015-2019, at an average 11.6 Mt but reduced to 9.8 Mt in 2020. However, with the easing and ending of travel restrictions in 2021 and 2022 (post Covid), road transport emissions rebounded to a relatively stable average of 11.0 Mt for the period 2021-2024.

In 2024, road transport emissions decreased for the first time since 2020 by 1.5% in 2023. While the fleet increased by 4.1% in 2024, the total energy consumption increased by 0.1%, with increases in biofuel and electricity use. With regards to biofuel, bioethanol and biodiesel consumption increased by 48.5% and 11.6%, respectively; whereas petrol consumption increased by 3.0% and diesel consumption decreased by 2.5%. Electricity consumption for transport in 2024 increased by 35.6%.

At the end of 2024, the EPA report that there were just over 82,400 battery electric vehicles (BEVs) and over 66,500 plug-in hybrid electric vehicles (PHEVs) in Ireland, approximately 76% of the CAP target for 2025 of 195,300 or 16% of the 2030 policy target of 941,500 vehicles. As a result, the continued uptake of electric vehicles has meant the annual target in 2024 was exceeded showing the CAP targets on EVs are taking effect.

In October 2025, the Department of Transport announced that Ireland has already met its CAP target of 195,000 electric vehicles on the road by the end of 2025, a key milestone in the nation's transition to cleaner transport.

Regarding maritime transport, **Figure 11-1** does not include emissions from international shipping – only domestic navigation is reported annually by the EPA to the EU as international shipping is not included in Ireland’s emissions targets, budgets or ceilings.

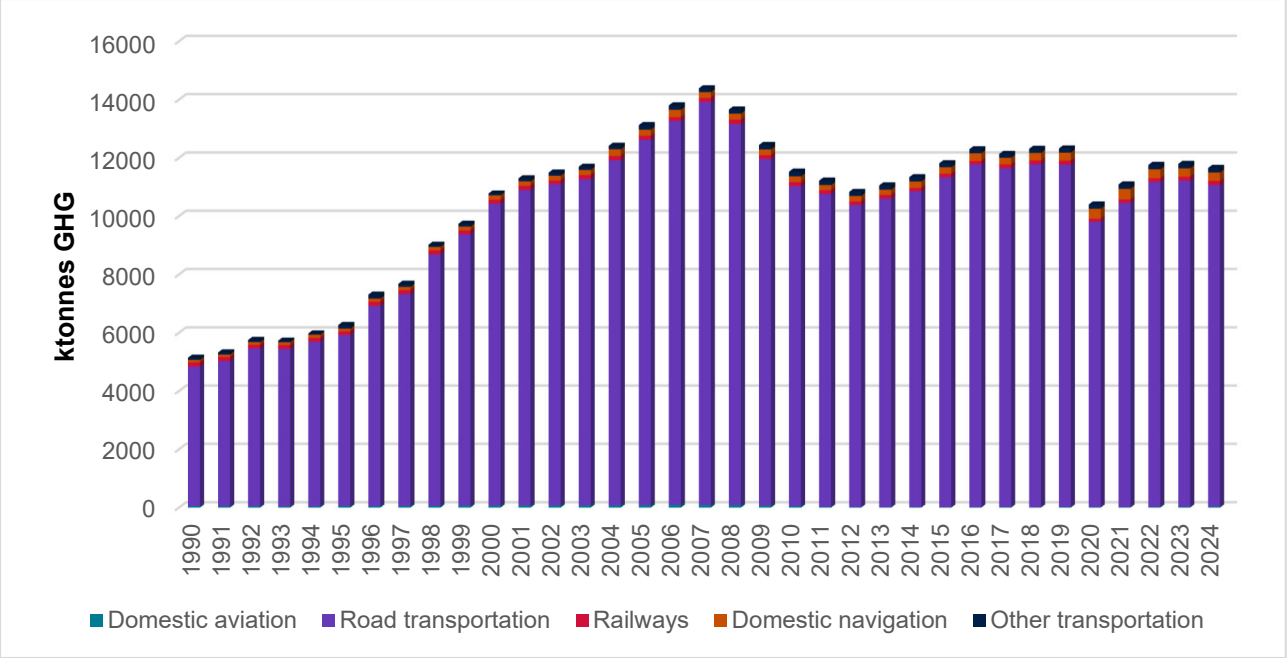


Figure 11-1: Transport Emissions 1990-2024 (source: EPA)

11.3.3 Future Scenario

11.3.3.1 Climate Mitigation

Achieving Net Zero Carbon by 2050 is set out as the national climate objective in section 3 of the 2015 Act which states:

> *The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy (in this Act referred to as the 'national climate objective').*

The EPA report on Ireland's Greenhouse Gas Emissions Projections annually. The latest dataset for 2024 to 2055 was published in May 2025 and the key findings are summarised as follows:

- Ireland is not on track to meet the 51% national climate objective emissions reduction target (by 2030 compared to 2018) which includes the assumption that the CAP24 measures are implemented.
- Greenhouse gas emissions are projected to be 9% to 23% lower by 2030 (compared to 2018) which places Ireland further from the 2030 national climate target compared to previous assessments.
- Carbon Budgets Budget period 1 (2021-2025) of 295 Mt is projected to be exceeded by between 8 Mt to 12 Mt.
- Budget period 2 (2026-2030) of 200 Mt is also expected to be exceeded by a significant margin of 77 Mt to 114 Mt (with carryover from Budget period 1).
- Sectoral emissions ceilings for 2030 are projected to be exceeded by the Buildings, Electricity, Industry and Transport sectors; and met by the sector 'Other'.

- Ireland is not projected to meet its EU target, set under the ESR, of a 42% emissions reduction by 2030 (compared to 2005) even with flexibilities applied.
- The EPA assessment shows that greenhouse gas emissions will be reduced by 10% to 22% by 2030 (compared to 2005).

In terms of projections for transport emissions under the 'with existing measures' (WEM) scenario, emissions are projected to decrease by 9% from 12.3 Mt to 11.2 Mt over the period 2018-2030. Measures included in the WEM scenario are:

- A 10% blend for petrol and a 20% blend for diesel at the pumps by 2030 is assumed. The diesel blend rate of 20% by 2030 has moved from planned (WAM) to implemented (WEM) measures since the last projections report.
- For uptake of electric vehicles, the WEM scenario assumes approximately 564,000 electric vehicles on the road by 2030. This includes approximately 270,000 passenger BEV (or 11% of total car stock in 2030) and almost 280,000 passenger PHEV.

Under the 'with additional measures' (WAM) scenario, transport emissions are projected to decrease by 21% from 12.3 Mt to 9.7 Mt over the period 2018-2030. Measures in the WAM scenario include:

- Uptake of electric vehicles of 640,750 by 2030.
- Reduction in total vehicle kilometres travelled to be achieved by behavioural and sustainable transport measures outlined in the Climate Action Plan 2024, such as a 50% increase in daily active travel journeys and a 130% increase in daily public transport journeys.

The measured baseline of transport emissions (in green) as well as the EPA projected WEM (light blue) and WAM (dark blue) scenarios are shown in **Figure 11-2**. The figure shows that traffic emissions in Ireland are projected to decrease in the medium to long term with current interventions such as the electrification of the fleet. The figure also shows key Sectoral Emissions Ceilings targets in 2025 and 2030 (in red) and illustrate that even with the projected decreases, the State is not on track to meet these ceilings in 2025 and 2030, as reported by the EPA.

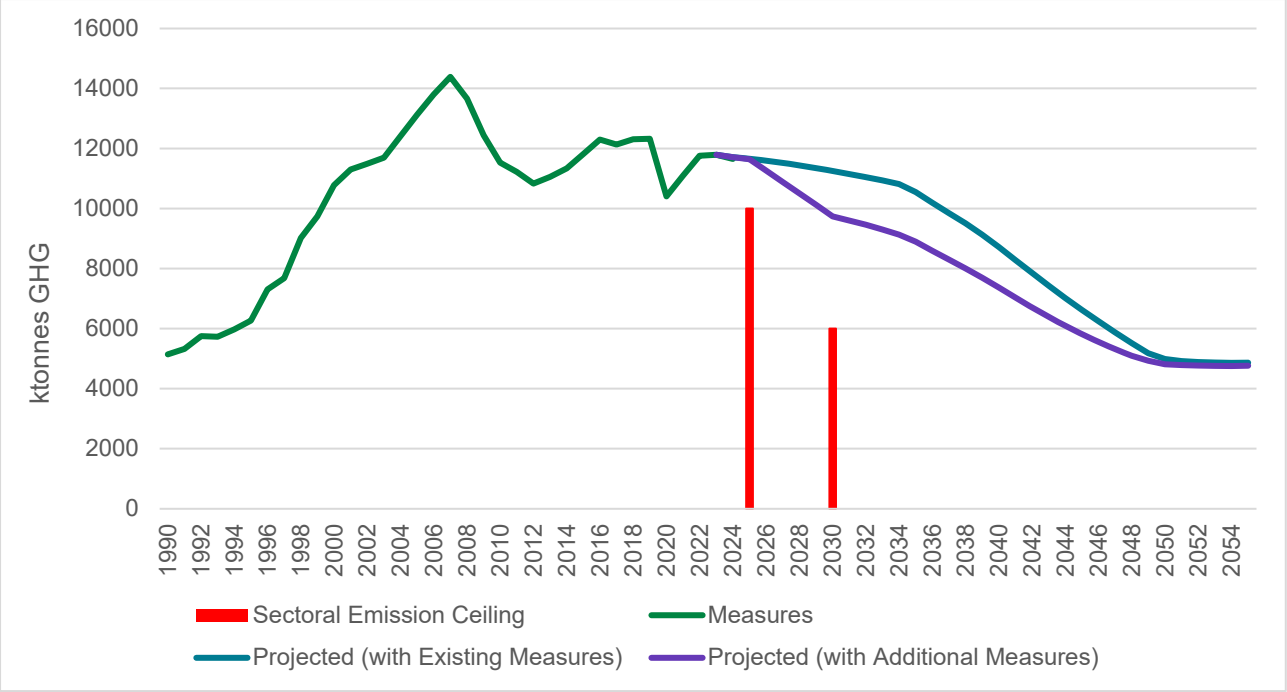


Figure 11-2: Transport Emissions Measured (1990-2024) and Projected (2024-2055) (source: EPA)

11.3.3.2 Climate Adaptation

Ireland's Climate Change Assessment: Climate Science – Ireland in a Changing World (EPA, 2024) and the National Climate Change Risk Assessment Technical Report (EPA, 2025) provide the following summary on the future for Ireland's climate regardless of the status of the Project:

- Projections of Irish temperature changes consistently show warming, with the magnitude of this warming increasing with delays in global mitigation action. Under Early action, the temperature increases averaged across the island of Ireland relative to the recent past (1976–2005) would reach 0.91°C [0.44–1.10°C] by mid-century before falling back to 0.80°C [0.34–1.07°C] at the end of the century. Whereas under Late action, by the end of the century it is projected that the temperature increases could be 2.77°C [2.02–3.49°C]. Warming also generally increases with the climate sensitivity of the Earth System Model (ESM) used for a given mitigation pathway. Heat extremes will become more frequent and more severe, cold extremes will become less frequent and less severe with further warming.
- In Ireland, intense precipitation extremes are projected to become more frequent and extreme with further warming in most locations. Projected changes in precipitation accumulations are more uncertain than those for temperature. While winters tend to get wetter and summers tend to get drier, this signal is not consistently found across all global ESMs. There is also substantial sensitivity to the choice of ESM used to drive the national simulations. Changes averaged across the island of Ireland show a slight increase of < 10% in annual mean accumulated precipitation amounts.
- Global sea level increases will be modified locally around the island of Ireland by ongoing isostatic rebound – the north-east of the island is slowly rising and the south-west slowly sinking (<0.2mm per year in most regions); multi-decadal ocean basin variability (order of several centimetres in a decade);

and the relative contributions to sea level change arising from the Greenland and Antarctic Ice Sheets over time. Larger relative contributions from Greenland would result in smaller increases for Ireland and vice versa due to the gravitational effects of the two ice sheets.

- Storm surges and extreme waves pose an ever-increasing threat to Ireland as sea levels continue to rise, including for many coastal cities such as Cork, Dublin, Galway, and Limerick, and to critical infrastructure. Particularly at risk are soft sediment shorelines. Projections of changes in storminess are highly uncertain and translate into large uncertainties in future frequency and intensity of extreme waves.
- Compound events are combinations of multiple climate impact drivers that occur at the same time, in the same area or both. The likelihood of both concurrent heatwave and drought conditions and storm surges with heavy precipitation have been observed to increase to date in Europe and are projected to further increase with additional warming.
- Ireland will continue to experience seasonal to multi-decadal variability arising from natural internal variations in the climate system. These will serve to modulate aspects such as temperature, precipitation, and storminess on seasonal to multi-decadal scales and, in doing so, periodically may reduce or enhance long-term global climate trends arising from human activities.
- Current atmospheric carbon dioxide levels are higher than at any time since the Middle Miocene (14 to 16 million years ago), according to the latest consensus atmospheric carbon dioxide record from a global consortium of scientists who study past atmospheric composition using proxies. Paleo-temperature estimates for the North Atlantic Ocean off Ireland indicate sea surface temperatures 10 to 13°C warmer than present-day during the Middle Miocene. Early action would keep global mean surface temperature rise within the bounds of our and our ancestors' past experience.

These national projections will be used to inform the CCR assessment in this chapter and will supplement project specific data (e.g. the flood risk assessment).

11.4 Description of Likely Significant Effects

11.4.1 Direct GHG Emissions from Construction

The results of the carbon analyses have considered the emissions associated with the following aspects of the construction phase:

- Capital dredging of material from Alexandra Basin West to achieve a standard depth of -10m CD using standard dredging and support vessels as employed in previous capital/maintenance dredging within Dublin Port;
- Treatment of the dredged sediment through stabilisation/solidification and the infilling of Berth 52/53 with treated sediment and raising of existing levels by 1.4m to facilitate the construction of the Unified Ferry Terminal (UFT);

- Export of contaminated materials which cannot be utilised on site to one of two potential licensed waste management facilities located <60km of the site via road for recovery using HGVs; and
- Import of clean material via road using HGVs for use as surcharge.

The emissions associated with the ABR2 Project were calculated using the One Click Life Cycle Assessment (LCA) software tool. Low carbon solutions will be investigated and used if suitable.

Table 11-13 shows the emissions associated with the construction stage were calculated to be 20,475 tCO_2e. Given the assessment criteria show in **Table 11-5**, the following criteria apply

- The construction phase GHG impacts are mitigated through 'good practice' measures such as the use of Ground Granulated Blast-furnace Slag (GGBS) blends as per the requirements for clinker replacement in CAP25 action to *specify low carbon construction methods and low carbon cement material*;
- The project has complied with existing and emerging policy requirements as per CAP25 requirements as noted above; and
- Fully in line to achieve Ireland's trajectory towards net zero through the selection of modern low carbon construction materials reducing the embodied carbon of this phase.

As such, this climate impact is considered to be **minor adverse and short term** which is not significant in EIA terms.

Table 11-13: Construction Phase GHG Emissions

Source	Description	Total GHG (tonnes CO_2e)
Pre-construction	Dredging of the Alexandra Basin	362
Product Stage (A1-A3)	Use of the binder for treatment of contaminated sediment and other materials	19,845
Construction Process Stage (A4-A5)	Construction activities associated with the treatment, all movement and infilling of sediment and other materials to Berth 52/53	268
Total		**20,475**

A further precautionary analysis was undertaken to assess the climate impact of exporting contaminated sediment offsite, in the unlikely event that export within Ireland is not possible. The maximum volume of material which is being allowed for export from the ABR2 Project site for alternative recovery, in the event that material cannot be accommodated within the proposed works (should all risks arise) is **60,085 m^3.**

For transport of materials in Ireland, this is expected to be completely done by HGV.

For transport of materials outside of Ireland, this is expected to be done by boat, with the vessel being of approximately 5,500t capacity.

For the recovery locations the following was assumed:

1. Within Ireland:

Identified materials which cannot be utilised within the site and require export will be transported to one of two potential licensed waste management facilities located <60km of the site by road for recovery.

- One site is located c. 50km away, with travel via c. 24km via Motorway (M50), c. 15km National Road network (N7) with the remainder of the journey via local roads of c. 11km (Notionally Enva, Blackhall Walshestown Naas, Co. Kildare W91 CF30).
- The other site is located c. 30km away with travel via c. 25km Motorway (M50/M1) and c. 5km local roads (Notionally IMS Hollywood, Great Nag's Head, Naul, Co. Dublin A41 YE92).

2. Outside Ireland – Belgium by boat

A number of alternative facilities are available, one of which (outlined below) has direct access for unloading from a vessel directly to the treatment/recovery facility.

RC Antwerpen, Scheldedijk 30-Haven 1025 (port 4), 9120 Beveren-Kruibeke-Zwijndrecht, Belgium

- Can receive vessels of up to 5m draft and overall length up to 120m. Tide dependent unloading, which potentially results in idling time waiting for access to the site. It would be prudent to assume up to 12 hours for tide changes.
- Assuming transport vessel has Cargo capacity of approx. 5,500t up to 21 round trips will be required to be undertaken. With each trip being approximately **630 nautical miles** and taking **2.6 days.**

3. Outside Ireland – Netherlands by boat

The Netherlands has a wide range of suitable facilities with shipping accessibility and material recovery capacity, although a number are inland and would require material transfer to a number of smaller barges on arrival in the Netherlands. Such facilities have been discounted as suitable treatment facilities on this basis. Of the four identified reasonably accessible facilities (i.e. could receive material directly from vessels arriving in the Netherlands from Dublin Port) there are a number which with variable shipping vessel/draft constraints on inland waterways affecting the size of vessel which access the facilities (smaller than the assumed 5,500t vessel). On the basis of assuming that the dredge transport vessel has capacity of approx. 5,500t the following two alternative facilities within the Netherlands are proposed to be assessed

Innovarec B.V. (Westdorpe) Autrichehavenweg 1, 4554 MB Westdorpe, Netherlands

- Max Length, draft and beam receivable: 135m x 7.5m x 22m.
- Assuming transport vessel has Cargo capacity of approx. 5,500t up to 21 round trips will be required to be undertaken. With each trip being approximately **607 nautical miles** and taking **2.5 days.**

BMR Schiedam (Boskalis) Nieuwe Waterwegstraat 52, 3115 HE Schiedam, Netherlands

- Max Length, draft and beam receivable: 135m x 6.5m x 20m
- Assuming transport vessel has Cargo capacity of approx. 5,500t up to 21 round trips will be required to be undertaken. With each trip being approximately **637 nautical miles** and taking **2.7 days.**

For both Dutch facilities there is scope for larger vessels to be utilised / can dock at the reception facilities, but the limiting factor (storage and handling space at the Dublin Port side) would risk throughput of material.

It is assumed that a smaller vessel (with cargo capacity of c. 5,500t) will be employed, increasing the number of trips that will be required (as a conservative basis for calculations) and will therefore require up to 21 round trips to be undertaken.

Results are shown in **Table 11-14:** here we show a comparative analysis to look at the climate impact of exporting contaminated sediment offsite.

Table 11-14: Carbon Emissions for exporting contaminated sediment.

Options	Method	Two way trip	tCO_2e
Ireland (Kildare W91 CF30)	HGV	60	**1,377**
Ireland (Dublin A41 YE92)	HGV	100	**2,295**
Belgium	Ship	2,334	**4,312**
Netherlands (Westdorpe)	Ship	2,248	**4,155**
Netherlands (Schiedam)	Ship	2,359	**4,360**

In terms of carbon emissions transport to the closet Irish location in Kildare is associated with the smallest carbon emissions, with emissions estimated to be approximately **1,377 tCO_2e.**

Emissions to Netherlands is associated with the highest carbon emissions. With emissions to Netherlands (Schiedam) estimated to be approximately **4,360 tCO_2e.**

11.4.2 Direct GHG Emissions from the Operation Phase

During the operation phase, some maintenance dredging may be required at Alexandra Basin West where some siltation may occur. Any maintenance dredging which may be required in the longer term will likely be carried out as part of DPC's regular maintenance dredging programme. The material generated would likely be disposed of at sea at a licensed disposal site (subject to further chemical testing as the ABR2 Project dredging and sediment treatment process aims to address the legacy contamination issue within Alexandra Basin West), agreed in accordance with DPC's maintenance dredging licence.

Any maintenance dredging undertaken would have a lower emissions profile to that for the capital dredging in **Table 11-13** (268 tonnes CO_2e). As such, this impact is considered to be **negligible impact** which is not significant in EIA terms.

11.4.3 Indirect GHG Emissions from the Operation Phase

11.4.3.1 Indirect GHG Emissions from the Operation Phase Road Traffic

As part of the wider Dublin Port Masterplan, the Project has potential for indirect impacts on road traffic emissions on the public roads serving the port with potential for changes in the numbers and types of passenger and freight vehicles accessing the port. These impacts have been fully assessed in the EIAR for the ABR and MP2 Projects at Dublin Port and are referenced in this chapter for completeness.

The results of the assessment indicate that the total GHG emissions will increase with the Masterplan in operation. These impacts are considered as **permanent slight adverse impact** which is not significant in EIA terms.

11.4.3.2 Indirect GHG Emissions from the Operation Phase Maritime Traffic

In addition to road transport, maritime transport is also a potential source of indirect GHG from the Project through changes in shipping patterns and vessel types and numbers associated with the Masterplan. These impacts have been fully assessed in the EIAR for the ABR and MP2 projects at Dublin Port and are referenced in this chapter for completeness.

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. Under the Dublin Port Masterplan 2040, shipping volumes at the port are predicted to increase annually at an average annual growth rate of 3.3% from 2010 to 2040.

The projected changes in shipping numbers associated with the overall Masterplan to 2040 indicate an increase in shipping emissions. This is considered to be a **permanent slight adverse impact** on climate which is transboundary in nature but not significant in EIA terms.

It is important to note that this assessment was highly conservative and did 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[3]. In addition, CAP25 requires the *promotion of Renewable Fuel Use in Maritime Transport.*

11.4.4 Climate Change Risk Assessment

11.4.4.1 Assessment of Construction and Operational Effects

11.4.4.1.1 Sensitivity Analysis

A sensitivity analysis was carried out for both the construction and operation of the Project. Details of current climate hazards impacting the North Estate area have been derived from the Global Facility for Disaster Reduction and Recovery 'Think Hazard!' tool, with data specific to County Dublin extracted from the tool. This data is supplemented as required with information from the Office of Public Works (OPW) FloodInfo.ie resource.

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

Table 11-15 presents the sensitivity analysis and the rationale for the sensitivity score for the construction of the Project and **Table 11-16** presents the sensitivity analysis and the rationale for the sensitivity score for the operational phase of the Project.

Table 11-15: Sensitivity Analysis of Climate Hazards to the Construction of the ABR2 Project

Climate event	Sensitivity
Flooding (Coastal)	Medium sensitivity to coastal flooding given the coastal nature. Damage caused by coastal flooding tends to last longer than any other weather-related hazard. Flooding can lead to road closures and/or slow down construction. Potential for impacts on the infilling works and contamination of flood waters with binder material. Can be readily mitigated with good working practices.
Flooding (Pluvial)	Medium sensitivity to pluvial flooding – as above.
Flooding (Fluvial)	Medium sensitivity to fluvial flooding – as above.
Extreme heat	Medium sensitivity to extreme heat. Any cementations binder used in the treatment process may be sensitive to extreme heat, which can impede or restrict solidification. Working in extreme heat can cause dehydration and heatstroke.
Extreme cold	Medium sensitivity to extreme cold weather, snow and ice can lead to road closures or port restrictions, slowing down construction.
Wildfire	High sensitivity to wildfires as wildfires can cause severe damage to structures or plant.
Drought	Low sensitivity to drought. Drought will have little to no impact on construction.
Extreme wind	Medium sensitivity to extreme wind. Extreme wind can cause material to disperse, and high-rise cranes or other elevated works may be restricted but only temporarily.
Lightning and hail	Low sensitivity to lightning and hail, as it may halt the construction if severe but only temporarily.
Fog	Low sensitivity to fog, only in extreme cases will fog may have a short-term impact or restriction some construction activities (e.g. working at heights).

Table 11-16: Sensitivity Analysis of Climate Hazards to the Operation of the ABR2 Project

Climate event	Detail
Flooding (Coastal)	Medium sensitivity to coastal flooding given the coastal nature. Damage caused by coastal flooding tends to last longer than any other weather-related hazard. Flooding can lead to road closures or port restrictions.
Flooding (Pluvial)	Medium sensitivity to pluvial flooding – as above.
Flooding (Fluvial)	Medium sensitivity to fluvial flooding – as above.
Extreme heat	Low sensitivity to extreme heat will have little to no impact on the port operation.
Extreme cold	Medium sensitivity to extreme cold. Extreme cold could create icy conditions, impacting the operations of the port.
Wildfire	High sensitivity to wildfires as wildfires can cause severe damage to structures or plant.
Drought	Low sensitivity to drought. Drought will have little to no impact on the port operation.
Extreme wind	High sensitivity to extreme wind. Storm surges can impact operations in within the port, damage port infrastructure and restrict shipping movements.
Lightning and hail	Low sensitivity to lightning and hail, as it may halt operations if severe.
Fog	Low sensitivity to fog as can impact marine-based operations but not significantly.

11.4.4.1.2 Exposure Analysis

An exposure analysis was carried out on the ABR2 Project. **Table 11-17** presents the reasons for the exposure scoring based on past climate events. **Table 11-18** presents the reasons for the exposure scoring based on future projections. The exposure analysis results are presented in **Table 11-19.**

Table 11-17: Exposure Analysis based on past climate events

Climate Event	Detail
Flooding (Coastal)	Coastal flooding is rated as high exposure. Historical flooding has occurred in the area. CFRAMS mapping for the Alexandra Basin West shows risk at a 10% Tidal AEP Event for the basin but some limited portside areas to the noth of the basin with a 0.1% Tidal AEP Event risk. Similarly, the CFRAMS mapping for the Berth 52/53 shows risk at a 10% Tidal AEP Event for the basin but a more extensive portside areas on all sides of the of the basin with a 0.5-0.1% Tidal AEP Event risk.
Flooding (Pluvial)	Pluvial flooding is rated as low exposure. No flooding events have occurred in the area.
Flooding (Fluvial)	Fluvial flooding is rated as medium exposure. CFRAMS mapping for both the Alexandra Basin West and Berth 52/53 shows risk at a 10% 10% Fluvial AEP Event for the basin but limited risk outside the basin.
Extreme heat	Extreme heat is rated low exposure; extreme heat has occurred in this area in the past. In 2022, temperatures reached 33.0°C. In 2018, there were high temperatures causing heatwaves and drought. 2006 was the warmest summer ever recorded since 1995**.** The maximum temperature recorded from 1979 to 2010 was 28.7°C.

Climate Event	Detail
Extreme cold	Extreme cold is rated medium exposure. Extreme cold spells do occur in the area, in 2018 there was heavy snowfall, and in 2010, there was snow and a severe cold spell.
Wildfire	Wildfire is ranked as low exposure. No wildfires have been recorded in the area.
Drought	Drought is rated as medium exposure; it does occur in the area, but not regularly.
Extreme wind	Extreme wind is ranked as high exposure; extreme winds and storms occur yearly.
Lightning and hail	Lightning and hail are ranked as medium exposure; these conditions occur regularly in Ireland.
Fog	Fog is ranked as medium exposure. Fog occurs regularly in Ireland; the mean number of yearly fog days between 1979 and 2010 in the area was 41.5 days.

Table 11-18: Exposure analysis of the location based on projected climate events.

Climate Event	Detail
Flooding (Coastal)	Coastal flooding is rated as high exposure. Coastal flooding is due to high tides, storm surge (due to high winds and low pressure), and wave set-up (energy transfer from offshore waves to the coast). Due to the proximity to the sea, the area is ranked as high exposure.
Flooding (Pluvial)	Pluvial flooding is rated as low exposure. No flooding events have occurred in the area.
Flooding (Fluvial)	Fluvial flooding is rated as moderate exposure. Flooding occurs from the River Liffey however, it is classed as coastal flooding, as the river meets the sea.
Extreme heat	Extreme heat is ranked as medium exposure. Average surface air temperatures are expected to increase in Ireland and across all seasons, and an increase in the intensity and duration of heatwaves is expected[4].
Extreme cold	Extreme cold is ranked as medium exposure. Climate change is predicted to increase the extremes. There is a history of extreme cold spells in Ireland; however, it is projected that there will be a reduction of frost days and a shortening of the frost season[5].
Wildfire	Low exposure to wildfires, no prediction of an increase in wildfires in the area.
Drought	Drought is ranked as medium exposure. Drought is predicted to increase; an increase in extreme heat will result in an increase in drought.
Extreme wind	Extreme winds are ranked as high exposure, storms regularly occur, and the frequency of these storms is set to continue to increase.
Lightning and hail	Lighting and hail are ranked as medium exposure; storms are predicted to increase, and hail and lightning occur regularly.
Fog	Fog is ranked as medium exposure. Fog occurs regularly in the area and is predicted to continue occurring.

[4] https://www.climateireland.ie/climate-change/projections-of-climate-change/
[5] https://www.epa.ie/environment-and-you/climate-change/what-impact-will-climate-change-have-for-ireland/#:~:text=Ireland%20has%20seen%20a%20reduction,and%20over%20Ireland%20more%20often.

Table 11-19: Exposure Analysis Summary

Aspect	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme heat	Extreme cold	Wildfire	Drought	Extreme Wind	Lightning and hail	Fog
Current	3	1	2	1	2	1	2	3	2	2
Future	3	1	2	2	2	1	2	3	2	2
Highest Score Current and future	3	1	2	2	2	1	2	3	2	2

11.4.4.1.3 Vulnerability Assessment

Based on the estimated sensitivity and exposure, the vulnerability of the construction and operational phases were assessed. The vulnerability of the construction phase is provided in **Table 11-20.** The vulnerability of the operational phase is provided in **Table 11-21**.

Table 11-20: Vulnerability Assessment for the Construction Phase

		Exposure		
Sensitivity		Low (1)	Medium (2)	High (3)
	Low (1)		Drought, Lightning, Fog (2)	
	Medium (2)	Pluvial Flooding (2)	Fluvial Flooding, Extreme Heat, Extreme Cold (4)	Coastal Flooding, Extreme Wind (6)
	High (3)	Wildfire (3)		

Table 11-21: Vulnerability Assessment for the Operation Phase

		Exposure		
Sensitivity		Low (1)	Medium (2)	High (3)
	Low (1)		Extreme Heat, Drought, Lightning, Fog (2)	
	Medium (2)	Pluvial Flooding (2)	Fluvial Flooding, Extreme Cold (4)	Coastal Flooding (6)
	High (3)	Wildfire (3)		Extreme Wind (9)

The assessment indicates that coastal flooding and extreme wind present vulnerabilities for the both the construction and operational phases, as these score >5 in the vulnerability assessment these are further assessed in the climate risk assessment.

11.4.4.1.4 Impact analysis

It should be noted that DPC has developed a comprehensive emergency management plan that caters for the range of accident and emergency events that may occur within its Estate (or that may occur outside the Estate and that have a direct, knock-on effect), and this plan is provided to the other relevant stakeholders, including An Garda Síochána, Dublin City Council, Transport Infrastructure Ireland, and the Principal Response Agencies.

The climate change risk register shows that with the detailed controls in place, the risk of adverse climate impact on the Project 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 operation phase.**

Table 11-22: Climate Risk Register for the Construction Phase

Risk Identification				Risk Assessment				Significance
Climate Variable	Risk Statement	Project Receptors	Impact Type	Planned Controls	Initial Risk Rating			
					Likelihood	Consequence	Risk Rating	
Coastal Flooding	Damage to construction plant and operations (e.g. ingress of water to the basin of Berths 52/53), etc, and impact to programme and budget of construction phase	Construction plant at the Alexandra Basin West and the basin of Berths 52/53 (including the treatment plant)	Asset damage Safety and Health Environmental	Coastal protection measures will be put in place prior to the works to protect the Bert 52/53 area from coastal inundation. The location of vulnerable equipment or materials, location of the works in relation to the basins/berths will be considered as part of the high-level design. Use of a 1mm thick High Density Polythene liner to cap the infill material and prevent any environmental hazards.	Unlikely	Moderate	Medium	Not Significant
Extreme Wind	Damage to construction plant (cranes if employed) etc, and impact to programme and budget of construction phase	Construction plant at the Alexandra Basin West and the basin of Berths 52/53 (including the treatment plant) with a high risk to crane or any elevated platforms.	Asset damage Safety and Health	Lifting operations will be programmed in advance of a favourable weather window of sufficient duration to complete the works. This will form part of the Environmental Operating Plan (EOP) for the construction phase. The safety team will monitor weather forecasts and warnings and will devise a set of clear restrictions on works in these elevated or exposed areas during weather warnings for the country or at winds speeds above a safe threshold (e.g. 10m/s). This will form part of the Environmental Operating Plan (EOP) for the construction phase.	Unlikely	Moderate	Medium	Not Significant

Table 11-23: Climate Risk Register for the Operation Phase

Risk Identification				Risk Assessment				Significance
Climate Variable	Risk Statement	Project Receptors	Impact Type	Planned Controls	Initial Risk Rating			
					Likelihood	Consequence	Risk Rating	
Coastal Flooding	Damage to port infrastructure and operations	Unified Ferry Terminal at the Berth 52/53 Location	Asset damage Safety and Health	The Project site is to be infilled and raised from original ground levels to a level of 4.58mOD, which is above the site-specific analysis of predicted tidal flood levels.	Unlikely	Moderate	Medium	Not Significant
Extreme Wind	Damage to port infrastructure and operations	Unified Ferry Terminal and surrounding area	Asset damage Safety and Health	The Project has been designed to account for the wind loading in County Dublin and wind forces are suitably distributed across the structure to ensure the stability and safety.	Unlikely	Moderate	Medium	Not Significant

11.5 Inter-relationships

The assessment of interactive effects considers the likely significant effects that may arise during the construction and operational phases of the 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 adaptation of the Project to these impacts has been considered into the design of the project. The principle interactive effects in this chapter are listed as follows:

- **Chapter 15 Material Assets – Traffic and transport** – the road traffic information provided in this chapter has been utilised to quantify the potential GHG emissions associated with road traffic generation on the immediate road network as a result of the construction and operation of the Project.
- **Chapter 7 Biodiversity, Flora and Fauna** – 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.

11.6 Mitigation and Monitoring

11.6.1 Construction Phase – Direct Greenhouse Gases

The projected emissions from the construction phase are presented using traditional methods and material. The need to mitigate these impacts is clearly signalled in national policy such as CAP25 (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). The Project will investigate and use low carbon solutions if suitable.

This commitment will be tracked through a Project Carbon Management Plan (PCMP) (refer to the CEMP (under separate cover)) which has been 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:

- All aggregates required imported 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, construction materials shall be sourced from local/regional sources 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.
- 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, a Mobility Management Plan (refer to the draft CEMP) has been prepared for site staff.

11.6.2 Operational Phase – Indirect Road Traffic Impacts

In terms of mitigation of the indirect road transport impacts, measures are typically at national policy level, and the following mitigation is committed to in CAP24/CAP25 specifically in relation to road traffic emissions from freight, therefore the ABR2 project will align with these policies:

- Ireland's Road Haulage Strategy (published December 2022) provides a roadmap as to how the Irish Government will support the Road Freight sector to decarbonise and meet the targets set out in CAP.
- CAP23 included a new target for the sector following Ireland becoming a signatory in November 2022 to the Global Memorandum of Understanding on Zero Emission Medium- and Heavy-Duty vehicles. This non-binding agreement targets 30% of sales of new Medium- and Heavy-duty vehicles (trucks and buses) to be zero emission by 2030, increasing to 100% of new sales in 2040.
- Ireland's Road Haulage Strategy 2022-2031 mandates a structural scale-up from standard B7 diesel (which contains up to 7% biodiesel) to a B20 blend (containing 20% biodiesel equivalent) by 2030, a move which will help to significantly reduce emissions from the Road Freight sector.
- Eco-Driver training, which trains drivers to operate vehicles in a safer and more eco-friendly manner, will be important in promoting decarbonisation in the road freight sector.
- The All-Island Strategic Rail Review has been published for public consultation and sets out further recommendations to increase the level of ambition for rail freight on the island, thereby contributing to the decarbonisation of the sector. These include recommendations to develop sustainable solutions for first/last mile rail freight access for Dublin Port, reduce Track Access Charges for freight services; strengthen rail connectivity to the island's busiest ports; and to develop a network of inland terminals close to major cities on the rail network.

11.6.3 Operation Phase – Indirect Shipping Impacts

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 GHG emissions from all large ships (of 5,000 gross tonnage and above) entering EU ports. 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.

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 Project and may be replaced with more stringent emission limits as further legislation driven mitigation.

11.7 Potential Cumulative Effects

Chapter 21 Cumulative Effects and Environmental Interactions outlines the methodology used to complete the assessment of cumulative effects, which may arise from adjacent or nearby development together with those predicted for the Project. The projects which have been considered within the assessment of cumulative effects are outlined in **Chapter 21 Cumulative Effects and Environmental Interactions**.

The Zone of Influence (ZoI) for climate includes the national environment where the receptor is the climate and the global atmosphere. Effects arising from the construction phase and operational phase due to changes in traffic flow are considered to impact on a national level. National, regional, and local data has been considered where relevant and available. Carbon dioxide (CO_2e) emissions have a global climate warming effect. This is unlike pollutants that affect local air quality where the rate of release, location, and prevailing weather, as well as the amount of pollutant, determines the local concentrations and the impact.

Local ambient concentrations of CO_2e are not relevant to this assessment as there are no limits or thresholds that can be applied to particular sources of carbon emissions (such as for air quality). Any amount of CO_2e released into the atmosphere will contribute to climate warming, the extent of which is determined by the magnitude of the release.

A cumulative impact assessment has been undertaken to consider the potential for cumulative effects from the ABR2 Project with plans and other Projects. 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 11-24**Table 11-. It is noted at the outset that all projects/developments will generate 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 11-24: Projects Screened-in for Potential Cumulative Effects on Climate

Project Description	Potential for Cumulatibe Impact
In-Port Projects	
Dublin Port 3FM	Potential for cumulative impact on traffic and shipping that has been addressed through current consents under the Masterplan volumes.
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	Direct operation phase emissions from combustion of natural gas.
Underground Cable Programme is set to replace and upgrade five 220kV circuits – EirGrid Capital Projects ref: CP114 6, CP121 6, CP 110 0	Potential for direct construction GHG emissions associated with materials and construction activity.
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	Operation phase emissions through energy use and material use.
Development at the Ringsend Wastewater Treatment Plant. Reg. Ref. 5319/22	Potential for direct construction GHG emissions associated with materials and construction activity.
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	Potential for direct construction GHG emissions associated

Project Description	Potential for Cumulatibe Impact
Point Bridge and Dodder Bridge	with materials and construction activity.
The Howth Yacht Club Marina Extension – Reg. Ref. DAS Permit Reg. No. S0010-01	
Poolbeg West SDZ. BP Ref. PWSDZ4341/23	
Development that will be for mixed usage – Reg.Ref. PWSDZ4341/23	Potential for direct construction GHG emissions associated with materials and construction activity.
Offshore Wind Energy Projects	
Dublin Array Wind Farm – Reg. Ref. FS007188	Potential for direct construction GHG emissions associated with materials and construction activity. Operationally these projests pose a positive impact through the reduction of fossil fuel energy.
Codling Wind Park – Reg. Ref. FS007045	
North Irish Sea Array – Reg. Ref. FS007031	
Seastacks Wind Farm - Reg. Ref. FS007134	
Dublin City Council Planning applications	
Application number 2681/20	Potential for direct construction GHG emissions associated with materials and construction activity.
Application number 3174/24	
Application number 3176/19	
Application number 3220/21	
Application number 3314/18	
Application number 3638/18	
Application number 3859/19	
Application number 4144/24	
Application number 4250/18	
Application number 4353/22	
Application number 4585/23	
Application number 4894/22	
Application number 4919/23	
Application number WEB1054/26	

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. The climate impact assessments for the 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 impacts to climate from embodied carbon in materials and construction methods from these projects, the cumulative impacts are considered **minor adverse, not significant** given the level of mitigation applied, such as the usage of low carbon concrete and steel.

For the surrounding projects in the area, 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, not significant** given the level of mitigation applied as mandated by the CAP policies on embodied carbon.

During operations, each of these developments will generate or carry additional road traffic volumes on the local road network. ABR2 will also have traffic impacts during the construction phase. Mitigation of road transport emissions is mandated at the national level through the CAP, (National Climate Policy is discussed in Section 11.2.2.2, Local Climate Policy in Section 11.2.2.3, and Climate Mitigation is discussed in Section 11.3.3.1) and the residual cumulative climate impact from road traffic from these projects is considered **moderate adverse, not significant**.

There are a number of offshore wind energy projects planned for the Irish sea as listed and each of these projects has potential for construction phase climate impacts through the need for significant material inputs and construction methods. However, the net climate impact of these developments once operational is long-term and positive in relation to Climate, given the introduction of renewable electricity generation and reducing the demand for fossil fuel combustion to generate electricity in line with CAP25 targets.

11.8 Residual Impacts

The GHG assessment shows the direct emissions associated with the construction stage were calculated to be 20,475 tCO_2e. Given the assessment criteria show in **Table 11-5**, the following criteria apply

- The construction phase GHG impacts are mitigated through ‘good practice’ measures such as the use of GGBS blends as per the requirements for clinker replacement in CAP25 action to *specify low carbon construction methods and low carbon cement material*;
- The project has complied with existing and emerging policy requirements as per CAP25 requirements as noted above; and
- Fully in line to achieve Ireland’s trajectory towards net zero through the selection of modern low carbon construction materials reducing the embodied carbon of this phase.

As such, this climate impact is considered to be **minor adverse and short term**, which is not significant in EIA terms.

Any maintenance dredging undertaken within Alexandra Basin West would have a lower emissions profile to that for the capital dredging and this direct impact is considered to be **negligible impact** which is not significant in EIA terms.

The results of the assessment indicate that the total GHG emissions associated with road traffic will increase with the full Dublin Port Masterplan capacity in operation. These indirect impacts are considered as **permanent slight adverse impact** which is not significant in EIA terms.

The projected changes in shipping numbers associated with the overall Dublin Port Masterplan 2040 indicate an increase in shipping emissions. This is considered to be an indirect **permanent slight adverse impact** on climate which is transboundary in nature but not significant in EIA terms.

The climate change risk register shows that with the detailed controls in place, the risk of adverse climate impact on the Project 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 operation phase.**

11.9 Summary of Effects and Conclusions

A summary of the impact assessment is provided in **Table 11-25.** The construction phase climate assessment was carried out to identify sources and quantify total direct GHG emissions generated from the construction activities associated with the Project. A series of choices such as low carbon concrete and steel materials will help mitigate this impact and fully comply with the targets of CAP25. As such the GHG emissions associated with the proposed construction of the development will result in a direct **minor adverse and short term.**

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

Table 11-25: Summary of Effects relating to Climate

Potential Effect and Receptor	Phase[6]		Magnitude of Effects	Sensitivity of Receptor	Significance of Effect	Significant/Not Significant	Mitigation Measures	Residual Effects
	C	O						
A GHG assessment, which assesses the impact of the ABR2 Project on climate through carbon emissions	✓	✓	Minor adverse	Minor adverse	Minor adverse	Not Significant	This is the effect of the dredging operation at Alexandra Basin West, the transportation of the dredged material, the treatment of the dredged material and the emissions associated with the infilling and associated works at the basin of Berths 52/53. The highest contributor to emissions is the binder used to treat the contaminated dredged material. Re-using the dredged material on site has dramatically decreased the emissions associated with the sediment needed for infill, it has removed the product stage emissions A1 – A3 emissions and reduced the emissions associated with transportation.	Permanent minor adverse impact.
A climate change risk (CCR) assessment, which assesses the vulnerability of the ABR2 Project to future climate change	✓	✓	Minor	Minor	Minor	Not Significant	Standard construction practices to manage weather related construction risk. Raising of the ground levels to mitigate coastal flood risk.	Minor adverse for the short-term construction phase and for the longer-term operation phase

[6] C: Construction Phase; O: Operational Phase

11.10 Limitations of Assessment

Certain difficulties were encountered during the quantification of materials at the design stage in order to assess the embodied construction carbon. It is considered that the volumes of materials, locations, specifications and other estimates contained in this chapter are robust and that same represent the likely figures, locations, specifications and volumes which will result from the development herein.

11.11 Obligations under section 15 of the 2015 Act

Dublin Port Company is required, as is An Coimisiún Pleanála, pursuant to the provisions of section 15 of the Climate Action and Low Carbon Development Act 2015, as amended, to perform its functions in a manner consistent with the:

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

The climate policy base is summarised in **Section 11.2.2** along with the relevant policy objectives and actions and provides an overview of the consistency of the Project to these policies.

In summary, the analysis demonstrates that in designing the Project, the Dublin Port Company has been consistent, in so far as practicable, with the requirements of section 15 of the Climate Action and Low Carbon Development Act 2015, as amended. For impacts under the direct control of DPC such as the construction works or the climate resilience, the impacts have been suitably mitigated and designed in line with national policy.

While there are 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, but such matters are outside the control of DPC.

In summary, DPC have devised the Project to be consistent, in so far as practicable, with the relevant climate policy base as required by section 15 of the Climate Action and Low Carbon Development Act 2015, as amended.