



Addendum To Chapter 9 – Climate Dated 29/05/2025

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9. CLIMATE

9.1 Introduction

This updated addendum to the Air Quality and Climate Chapter (Chapter 9) assesses the impacts which the Proposed Development and Overall Project may have on Climate as defined in the EPA EIA Report Guidelines 2022 (EPA, 2022a). This section presents some additional information relating to Climate, please refer to the EIAR Chapter 9 for more information on air quality and climate. The assessment has been undertaken for the Permitted Development, (Building A, B and C), the Proposed Development (Building E, F & G) and the Overall Project (Buildings A-G).

The updated addendum is in response to the request from An Bord Pleanála dated 2nd May 2025 in which the following information was sought:

In light of the publication of the Climate Action Plan 2025 by Government and Ireland's Greenhouse Gas Emissions Projections 2023-2050 by the Environmental Protection Agency since the preparation of the Environmental Impact Assessment Report and its addendum, to assist the Board in carrying out its Environmental Impact Assessment you are required to:

- (i) *re-affirm, or otherwise, the findings of its environmental assessment in relation to climate based on its modelling assumptions, and*
- (ii) *provide details of, and observations regarding, the significant differences that may arise in the emerging context noting the points raised in 2(a) and (b) above.*

An updated climate chapter of the EIAR has provided to ABP as part of a RFI dated August 2023. Specifically, this updated addendum is in response to Information Request 2. which focusses on the recently published Climate Action Plan 2025, published 15th April 2025, and also refers to the EPA Report entitled "Ireland's Greenhouse Gas Emissions Projections - 2023-2050" (EPA, 2024a). The request asks that the findings of the environmental assessment be re-affirmed, or otherwise, and that details and observations be made regards the two publications referred to in the previous sentence.

This updated addendum discusses the Proposed Development and Overall Project in the context of the recently published CAP25 and in the context of the relevant Carbon Budgets and the Electricity Sectoral Emission Ceilings, as outlined in the above-mentioned EPA Report (EPA, May 2024) and in the context of Section 15 of the *Climate Action and Low Carbon Development (Amendment) Act 2021*. This response has also included a review of the EPA Report entitled "Ireland's Greenhouse Gas Emissions Projections - 2024-2055" (EPA, 27th May 2025, available to download on the 29th May 2025).

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9.2 Methodology

The updated climate assessment has been carried out in line with the guidance outlined in the European Commission publications "Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment" (EC, 2013) and "Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report" (EC, 2017) and the EPA publication "Guidelines on the Information to be Contained in Environmental Impact Assessment Reports" (EPA, 2022a).

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

The significance criteria for each assessment are described below.

The assessment methodology has been derived with reference to the most appropriate guidance documents relating to climate which are set out in the following sections of this report. The EPA Guidelines (EPA, 2022) outlines the requirements for what an EIAR should contain based on Article 5(1) of the amended Directive (2014/52/EU).

"The information to be provided by the developer shall include at least:

- a) a description of the project comprising information on the site, design, size and other relevant features of the project;*
- b) a description of the likely significant effects of the project on the environment;*
- c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;*
- e) a non-technical summary of the information referred to in points (a) to (d); and*
- f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."*

An overview of the methodology undertaken for the climate impact assessment is outlined below, which is based on the EPA Guidelines (EPA, 2022):

- A detailed baseline review of GHG emissions has been undertaken in May 2025 in order to characterise the baseline environment. This has been undertaken through a review of available published GHG emission data;
- A review of the most applicable guidelines for the assessment of GHG emissions has been carried out in order to define the significance criteria for the Construction, Operational and Decommissioning Phases of the Proposed Development and Overall Project. These guidelines describe appropriate methods for quantifying the emissions of GHGs from the Proposed Development and Overall Project;
- Predictive calculations and impact assessments relating to the likely impact of the Proposed Development and Overall Project on climate (GHG emissions) have been undertaken;
- An assessment of the vulnerability of the Proposed Development and Overall Project to climate change has been undertaken; and

- A schedule of mitigation measures has been incorporated where required to reduce, where necessary, the identified potential climatic impacts associated with the Proposed Development and Overall Project.

The EPA report *Ireland's Greenhouse Gas Emissions Projections - 2023-2050'* (EPA, 2024a) was reviewed and no updated modelling of GHG emissions was deemed necessary as the EPA was predicting 80% renewables by 2030 under the WAM scenario which was consistent with the assessment undertaken for the previous addendum to the climate chapter of the EIAR. However, EPA report *Ireland's Greenhouse Gas Emissions Projections - 2024-2055'* (EPA, 27th May 2025) was recently reviewed and given that the EPA is now predicting 68.3% renewables by 2030 under the WAM scenario, updated modelling of GHG emissions has been undertaken in this addendum to reflect this.

9.2.1 Relevant Legislation & Guidance

The addendum has been updated to reflect new guidance which have been recently published since the submission of the original addendum. All relevant updated plans and policies have been updated in this assessment including the following publications:

- Department of Environment, Climate and Communications (DECC) (2024) Future Framework for Offshore Renewable Energy Policy Statement
- Department of Environment, Climate and Communications (DECC) (2024) National Adaptation Framework 2024
- Department of Environment, Climate and Communications (DECC) (2024) Buying Greener: Green Public Procurement Strategy and Action Plan (2024–2027)
- Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) ThinkHazard! Tool. Available online at: <https://thinkhazard.org/en/>
- Government of Ireland (2025) 2025 Climate Action Plan
- Institute of Air Quality Management (IAQM) (2024) Guidance on the assessment of dust from demolition and construction v2.2
- SEAI (2025) Interim National Energy Balance 2024
- Transport Infrastructure Ireland (TII) (2022) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

In addition, updated data of relevance to the climate impact assessment is outlined below:

- Environmental Protection Agency (EPA) (2025) *Ireland's Greenhouse Gas Emissions Projections – 2024 - 2055*
- Environmental Protection Agency (EPA) (2024a) *Ireland's Greenhouse Gas Emissions Projections – 2023 - 2050*
- Environmental Protection Agency (EPA) (2024b) Ireland's Provisional Greenhouse Gas Emissions 1990-2023 July 2024
- Met Éireann (2024a) Met Éireann website: <https://www.met.ie/science/translate>
- Met Éireann (2024b) Annual Statement for 2024

Following on from the European Climate Law (EU, 2021), and as part of the EU's "Fit for 55" legislative package where the EU has committed to a domestic reduction of net greenhouse gas emissions by at least 55% compared to 1990 levels by 2030, the Regulation (EU) 2018/842 "Effort Sharing Regulation" has been strengthened with increased ambition by the year 2030. Ireland is to increase the GHG emission reduction target from 30% to 42% relative to 2005 levels whilst the ETS market will also have more stringent reductions from the currently proposed reduction of 43% by 2030 compared to 2005 to a 61% reduction by 2030 based on annual reductions of 4.2% compared to the previous annual reduction level of 2.2% per year (EU, 2021) with levels in 2022 reducing to 1,285 million tonnes CO₂eq. The EU, in May 2023, published Directive (EU) 2023/959 Amending Directive 2003/87/EC Establishing A System For Greenhouse Gas Emission Allowance Trading Within The Union And Decision (EU) 2015/1814 Concerning The Establishment And Operation Of A Market Stability Reserve For The Union Greenhouse Gas Emission

Trading System. As part of this Directive, the cap on emissions has been tightened again to reduce emissions covered by the EU ETS by 62% by 2030 compared to 2005.

9.2.2 Emission Trading System

The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing, heavy industry and facilities which have greater than 20MW thermal input capacity (which is applicable to the Proposed Development and Overall Project). Under the ETS, there are no country-specific targets. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS and thus includes GHG emissions from transport, residential and commercial buildings and agriculture. In contrast to the ETS, Ireland has a country-specific obligation under EU Effort Sharing Regulation (EU 2018/842) of a 42% reduction in non-ETS GHG emissions by 2030 relative to its 2005 levels as outlined in Section 9.2.1.

As outlined in European Commission publication "*Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment*" (EC, 2013) the context of global or EU-wide emissions, the GHG emissions associated with the Proposed Development and Overall Project should be assessed in the context of the ETS. The approach that has been adopted at EU level is the EU Climate and Energy Package. In this regard, the EC guidance (EC, 2013) has stated that:

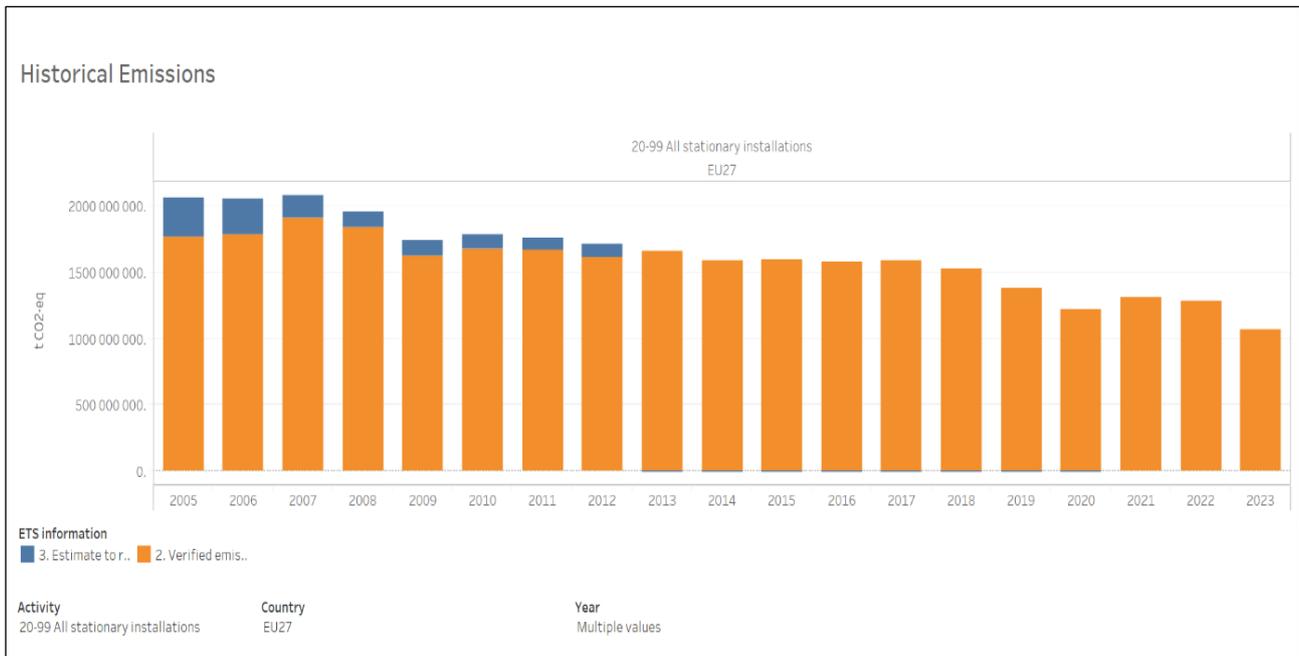
"The EU Emissions Trading System, the backbone of the EU mitigation effort, which sets a cap on emissions from the most polluting sectors including over 11,000 factories, power plants and other installations, including airlines. By 2020, the cap should result in a 21% reduction relative to 2005 levels. The EU ETS covers about 40% of all EU emissions." (EC, 2013).

As outlined in the EU publication "*The EU Emissions Trading System in 2020: trends and projections*" (EU, 2020), the European Union's energy system is decarbonising rapidly. The report states:

"Total ETS emissions from stationary installations declined by 9.1% between 2018 and 2019, the largest drop in a decade, driven by a strong decrease in coal use for power production" (EU, 2020)

As shown in Figure 9.1 in the most recent verified emissions from the ETS covering 2005 – 2023 this trend is continuing with the exception of 2021 due to COVID impacts in 2020. On an EU-wide basis, the ETS market in 2023 was approximately 1,064 million tonnes CO₂eq.

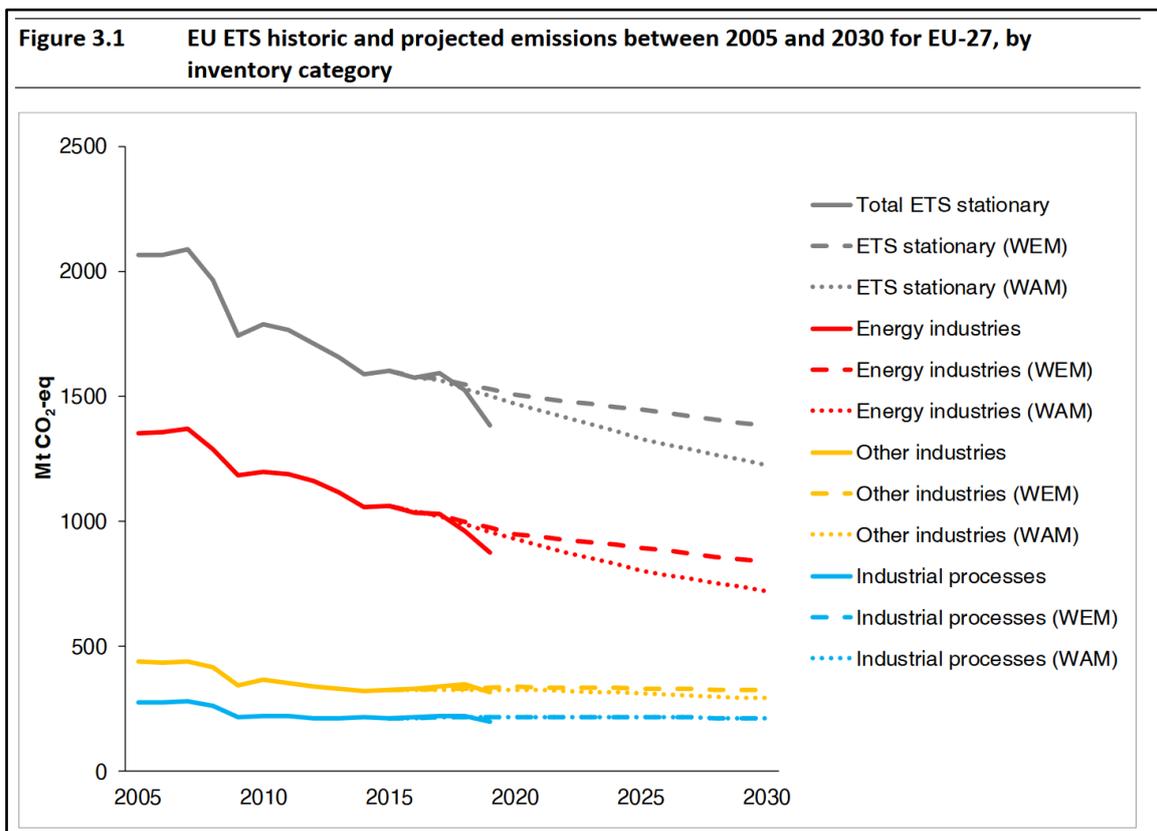
Figure 9.1 Historical ETS Verified Emissions 2005 - 2023



a. Taken from <https://www.eea.europa.eu/data-and-maps/dashboards/e-missions-trading-viewer-1>

The European Topic Centre on Climate report entitled "Trends and projections in the EU ETS in 2020" (ETC, 2020) indicates that the reduction in GHG emissions is predicted to continue up to at least 2030 due to current policies in place. As shown in Figure 9.2, both the energy industries and "other industries" are predicted to decrease significantly by 2030.

Figure 9.2 Historical ETS Verified Emissions & Project Emissions 2005 – 2030



9.2.3 National Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the 2015 Act). The purpose of the 2015 Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050' (3.(1) of No. 46 of 2015). This is referred to in the 2015 Act as the 'national transition objective'.

In June 2020, the Government published the Programme for Government – Our Shared Future (Government of Ireland, 2020). In relation to climate, there is a commitment to an average 7% per annum reduction in overall greenhouse gas emissions from 2021 to 2030 (51% reduction over the decade) with an ultimate aim to achieve net zero emissions by 2050. Policy changes include the acceleration of the electrification of the transport system, including electric bikes, electric vehicles and electric public transport, alongside a ban on new registrations of petrol and diesel cars from 2030. In addition, there is a policy to ensure an unprecedented modal shift in all areas by a reorientation of investment to walking, cycling and public transport.

The Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021) was published in July 2021. The purpose of the 2021 Climate Act is to provide for the approval of plans '*for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050*'. The 2021 Climate Act will also '*provide for carbon budgets and a sectoral emissions ceiling to apply to different sectors of the economy*'. The 2021 Climate Act removes any reference to a national mitigation plan and instead refers to both the Climate Action Plan, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Environment Minister shall request each local authority to make a 'local authority climate action plan' lasting five years and to specify the mitigation measures and the adaptation measures to be adopted by the local authority. The 2021 Climate Act has set a target of a 51% reduction in the total amount of greenhouse gases over the course of the first two carbon periods ending 31 December 2030 relative to 2018 annual emissions. The 2021 Climate Act defines the carbon budget as 'the total amount of greenhouse gas emissions that are permitted during the budget period'

Section 15 of the Climate Action & Low Carbon Development Act (Amended) 2021 states that:

- (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."

The Proposed Development and Overall Project are aligned with the above-mentioned plans, strategies and objectives as outlined in Section 9.10.

The Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021) outlines a series of specific actions including:

- To make a strategy to be known as the 'National Long Term Climate Strategy' not less than once in every five-year period with the first to be published for the period 2021 to 2035 and with each subsequent Strategy covering the next three five-year carbon budgets and also include a longer term perspective of at least 30 years;

- To adopt a system of carbon budgets which will be determined as part of a grouping of three five-year periods calculated on an economy-wide basis, starting with the periods 2021 to 2025, 2026 to 2030, and 2031 to 2035;
- To introduce a requirement for Government to adopt “sectoral emission ceilings” for each relevant sector within the limits of each carbon budget;
- To request all local authorities to prepare climate action plans for the purpose of contributing to the national climate objective. These plans should contain mitigation and adaptation measures that the local authority intends to adopt;
- Increasing the power of the Advisory Council to recommend the appropriate climate budget and policies;
- Requiring the Minister to set out a roadmap of actions to include sector specific actions that are required to comply with the carbon budget and sectoral emissions ceiling for the period to which the plan relates; and
- Reporting progress with the CAP on an annual basis with progress including policies, mitigation measures and adaptation measures that have been adopted.

In terms of wider energy policy, as outlined in the EPA publication “*Ireland’s Greenhouse Gas Projections 2024-2055*” (EPA, 2025) under the *With Additional Measures* (WAM) scenario, emissions from the energy industries sector are projected to decrease by 68% to 3.4 Mt CO₂eq over the period 2018 to 2030 including the proposed increase in renewable energy generation to approximately 68.3% of electricity consumption. The WAM scenario is based on the projection of future emissions based on the measures outlined in the latest Government plans at the time projections are compiled. This includes all policies and measures included in the With Existing Measures (WEM) scenario, plus those included in Government plans but not yet implemented.

In this scenario it is estimated that renewable energy generation increases to approximately 68.3% of electricity consumption. This is mainly a result of further expansion in wind energy (comprising 7.1 GW onshore, 2.7 GW offshore). Expansion of other renewables (e.g. solar photovoltaics to 6.3 GW) also occurs under this scenario.

Under the With Additional Measures, one power station (Edenderry) operates to the end of 2023 with 30% co-firing. In this scenario the Moneypoint power station is assumed to operate in the market up to end 2025 at which point it no longer generates electricity from coal.

In terms of inter-connection, the Greenlink 500MW interconnector to the UK came on stream in 2025 and the Celtic 700MW interconnector to France is due to come on stream in 2027 (EPA, 2025).

The 2025 Climate Action Plan (CAP25) (DECC, 2025) provides a detailed plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and set out in the Climate Act 2021. The plan outlines the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. CAP25 also detailed the required governance arrangements for implementation including carbon-proofing of policies and establishment of sectoral emission ceilings and carbon budgets. In relation to data centres, CAP25 provides that emissions from industry sectors covered by the ETS are subject to EU-wide rather than national targets set out under EU Effort Sharing Regulation.

As outlined in CAP25, electricity accounted for 12.5% of Ireland’s GHG emissions in 2023 which represents a decrease of 26.2% over the period 2018 – 2023. This is due to an increase in renewable electricity generation which stood at 40.7% in 2023. CAP25 also confirms that while annual emissions are reducing for the first carbon budget period, mitigation is insufficient and the projected excess will be circa 1 MtCO₂eq for the period.

As part of the preparation of a 'local authority climate action plan', each local authority shall consult and co-operate with an adjoining local authority in making a local authority climate action plan and co-ordinate the mitigation measures and adaptation measures to be adopted, where appropriate. Each local authority is also required to consider any significant effects the implementation of the local authority climate action plan may have on the adjoining local authority.

Individual county councils in Ireland have also published their own Climate Action Plans including climate change strategies in the area of GHG reductions, energy efficiencies and pathways to achieve net zero by 2050 which outline the specific climate objectives for that local authority and associated actions to achieve the objectives. The Fingal CC Climate Action Plan 2024-2029 (FCC, 2024) (the FCC Plan) outlines a number of goals and plans to prepare for and adapt to climate change within Fingal. The FCC Plan has outlined a target of a 51% reduction in carbon emissions and an energy efficiency improvement of 50% in FCC operations by 2030, creating a pathway to net zero by 2050.

The carbon budget programme was published in November 2021 and comprises three successive 5-year carbon budgets. In relation to carbon budgets, the Climate Action and Low Carbon Development (Amendment) Act 2021 states 'A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')'. The carbon budget is to be produced for 3 sequential budget periods with the third carbon budget in draft format. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. The total emissions allowed under each budget is set out below in Table 9.1, as well as the average annual reduction for each 5-year period.

Table 9.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025

Period	Mt CO₂eq	Emission Reduction Target
2021-2025	295 Mt CO ₂ eq	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO ₂ eq	Reduction in emissions of 15.3% per annum for the second budget period.
2031-2035	151 Mt CO ₂ eq	Reduction in emissions of 3.5% per annum for the third provisional budget.

CAP25 provides that the economy-wide carbon budgets will be supplemented by sectoral emissions ceilings, setting the maximum amount of GHG emissions that are permitted in a given sector of the economy during each five-year carbon budget. The Sectoral Emission Ceilings for each Sector are shown in Table 9.2. It should be noted that 5.25 MtCO₂eq of annual emissions reductions are currently unallocated on an economy-wide basis for the second carbon budget period (2026-2030). These will be allocated following a mid-term review and identification of additional abatement measures. The electricity sector emitted approximately 10.5 MtCO₂eq in 2018 and has a ceiling of 3 MtCO₂eq in 2030 which is a 71% reduction over this period.

Table 9.2 Sectoral Emission Ceiling 2030

Sector	Baseline (MtCO₂eq)	Carbon Budgets (MtCO₂eq)		2030 Emissions (MtCO₂eq)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50

Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, a new approach aligned with the EU LULCCF Regulation has been adopted.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

The 2025 CAP has outlined the path towards the electricity sectoral emission ceiling target of 3 Mtonnes of CO₂eq by 2030. The core measures are:

- Increasing the share of renewable electricity to 80%,
- Indicative Onshore Wind Capacity of up to 9GW,
- Indicative Offshore Wind Capacity of at least 5GW,
- New Flexible Gas Plant of at least 2 GW,
- Demand Side Flexibility – 20-30%,
- Indicative Solar PV Capacity of 8GW.

ESB Networks has published “*Networks For Net Zero – Delivering the Electricity Network for Ireland’s Clean Electric Future*” (ESB Networks, 2023) which outlines a glidepath to net zero by 2050. UCC / MaREI have also separately published the report “*Our Climate Neutral Future – Zero by 50*” (UCC / MaREI, 2021) which details how the energy system can achieve net zero by 2050 by using technologies, concepts and interventions will already exist today. As shown in Figure 9.4, the report predicts that the energy system will be dominated by renewable energy in 2050.

Although the pathway may vary somewhat depending on future policy decisions, it is possible that net zero electricity (shown in green in Figure 9.3) may be achieved prior to 2040 compared to the conservative assumption that net zero electricity would not be achieved until 2050. Figure 9.3 outlines the year-on-year projected GHG emissions with electricity (in green) flipping to negative in the year 2035. As outlined in the figure, the ESB state that the profile reflects a diversity of pathways to meet net zero and carbon budgets. The policy decisions that will impact on the decarbonisation of the national grid include policies which affect wind power (both onshore and offshore), solar, hydrogen and other energy sources, all of which will have a direct impact on the trajectory of the road to net zero GHG emissions. This GHG assessment has been undertaken based on a reasonable worst-case assessment in line with IEMA guidance (IEMA, 2022) which allows for the inherent uncertainty. The IEMA guidance states that the assessment approach should be based on the following:

“Once the scope and baseline is set, the calculation method can be agreed along with data collection. The methodology should result in a relevant, complete, consistent, transparent and accurate assessment of the reasonable worst case.” (IEMA, 2022)

In relation to uncertainty, the IEMA Guidance (IEMA, 2022) states:

"Uncertainty can arise from quality of data, study boundaries and period of assessment, and can never be eliminated from a study. Uncertainty should be considered and if it significantly affects the outcome of the study, additional steps should be taken to reduce it and provide confidence in results. As a reminder, a relevant, complete, consistent, transparent and accurate assessment of the reasonable worst case must be undertaken despite uncertainties."

This approach, based on IEMA Guidance (IEMA, 2022) which allows for the inherent uncertainty in the assessment is outlined below:

- In order to address the uncertainty in the year of opening, a worst-case approach has assumed that the Proposed Development will open in 2025 which will overstate the GHG from the national grid compared to assuming a later date.
- In order to address the uncertainty in the phasing of operations, a worst-case approach has assumed that the Proposed Development will immediately operate at full load whereas in reality the ramp-up period will be several years.
- In order to address the uncertainty in the operational load, a worst-case approach has assumed that the Proposed Development will operate at 100% load whereas the average annual load is likely to be no more than 80%.
- In order to address the uncertainty in the national grid, a worst-case approach has assumed that the national grid will only obtain net zero by 2050 rather than the predicted 2040.

Figure 9.3 Net Zero Energy System Emissions Reduction Profile (UCC / MaREI)

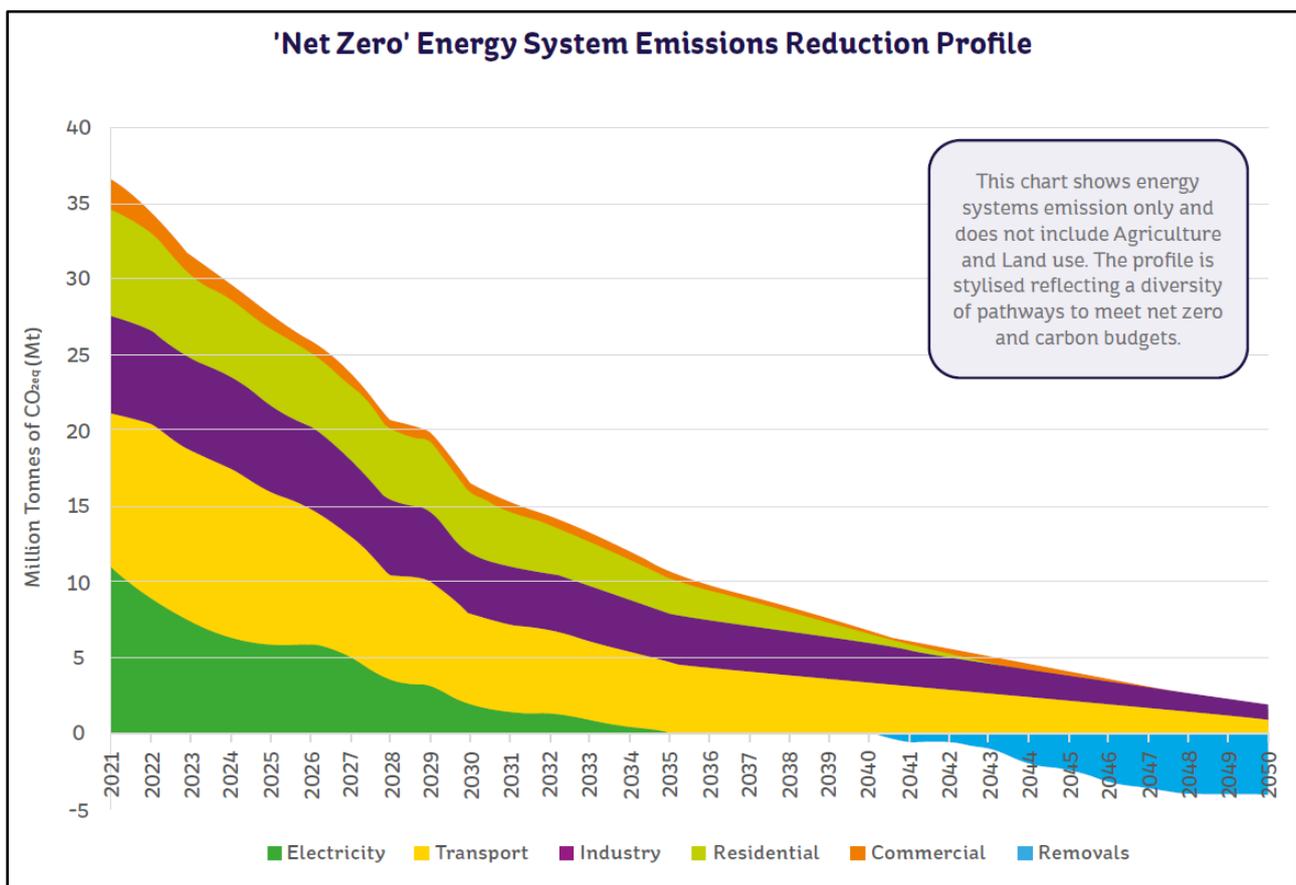
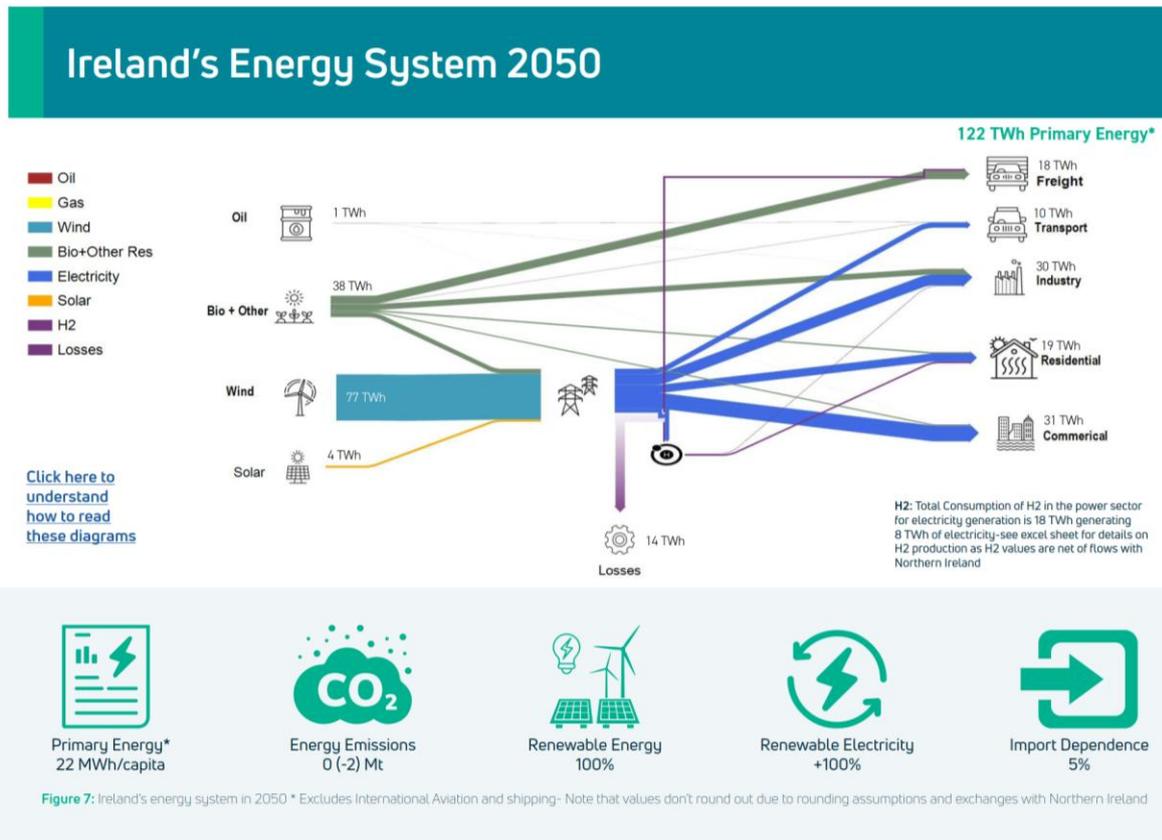


Figure 9.4 Ireland's Energy System 2050 (UCC / MaREI, 2021)



The GHG emission factor of electricity is based on current reported levels (Year 2023) with the assumption that the GHG emission factor have been assumed to decrease in a linear (straight-line) fashion to reach 135 gCO₂/kWh by 2030 for the purposes of this assessment. Although the assumption of a linear decrease may vary year-on-year, with some years decreasing faster than linear and some years decreasing slower than a linear pattern, it is likely that the 2030 will be similar to that modelled in this assessment as it is in line with the EPA predictions (dated 27th May 2025). This is equivalent to a renewable fraction in the national grid of 68.3% which is the predicted fraction, for the WAM scenario, as outlined in "Ireland's Greenhouse Gas Emissions Projections - 2024-2055" (EPA, May 2025, as shown in Table 9.3 below and thereafter linearly reduce to meet net zero by 2050. The SEAI Interim National Energy Balance 2024 confirms that GHG emissions from electricity reduced by 7.5% compared to 2023 (SEAI, 2025)¹. The government policy is outlined in the relevant Climate Action Plans including both CAP24 and CAP25 which states a target of 80% renewables by 2030, however, as a worst-case approach a value of 68.3% renewables has been used in the calculations. A renewable rate of 68.3% should be viewed as worst-case as CAP25 (DECC, 2025) and ESB projections are based on an 80% renewable fraction in 2030.

A recent report from MaREI (MaREI, Sept 2024) states that the Electricity sector has an emission ceiling of 40 Mt CO₂eq for the first carbon budget period (2021–2025), with the EPA's 2023 provisional greenhouse gas inventory reporting that 67.9% of the sectoral emissions ceiling has been used in the first 3 years of the first carbon budget. The recently published *Climate Change Advisory Board Annual Review 2025: Electricity* (CCAB, 2025), based on the EPA's 2023 data combined with the latest emissions data from the EU ETS for 2024 estimated that 83.6% of the electricity sectoral emissions ceiling has been used in the first 4 years of the five-year sectoral emissions period. Thus, 2024 used 15.7% of the sectoral budget (i.e. 83.6% - 67.9% = 15.7%) and given that energy-related emissions have fallen each year for the last 3 years, and are down 11% compared to 2021 levels (SEAI, 2025) it is likely that 2025 will have emissions

¹ <https://www.seai.ie/news-and-events/news/seai-interim-national-energy-balance-2024>

of a similar (or lower) magnitude to 2024 and thus it is likely that the first electricity sectoral budget period (2021-2025) will be approximately 99% of the budget and thus in compliance. This analysis has recently been supported by work undertaken by MaREI at the University of Cork in terms of both sectoral emission ceilings and the first carbon budget²

"Ireland is currently on track to meet the first carbon budget (CB1) when we compare the last three years of data with a greenhouse gas emissions pathway that aligns with CB1. The CB1 pathway ensures Ireland remains within the statutory target of 295 MtCO₂eq in the time period 2021-2025" (MaREI, Sept 2024).

The EPA report *"Ireland's Greenhouse Gas Emissions Projections – 2024 – 2055"* (EPA, 2025) has predicted that the first carbon budget will be unlikely to be complied with. However, this report is based on data up to the end of 2023. The MaREI (Sept, 202) report takes into account more recent 2024 data and thus may be more presentative of current projections.

Table 9.3 Electricity GHG Emission Intensity 2025 - 2035 (SEAI, 2023)

Year	Electricity ^{Note 1} (g CO₂ / kWh)
2025	220
2026	203
2027	186
2028	169
2029	152
2030	135
2031	128
2032	122
2033	115
2034	108
2035	101

a. Based on a carbon intensity of 254 g CO₂ / kWh in 2023 and assuming linear interpolation to 135 g CO₂ / kWh by 2030. The 2030 target is equivalent to reaching 68.3% renewable electricity by 2030 as outlined in EPA (2025). 135 gCO₂/kWh in 2030 has been derived as follows: Year 2023 has a GHG emission rate of 254 gCO₂/kWh based on 40.7% renewables in the national grid. Thus, this equates to a fossil-fuel GHG emission rate of 428 gCO₂/kWh (254 / (1.00-0.407) = 428). With the renewable rate predicted to be 68.3% in 2030, and assuming the same fossil-fuel GHG emission rate of 428 gCO₂/kWh, the overall GHG intensity of the grid in 2030 will be approximately 135 gCO₂/kWh (428 x (1.00-0.683) = 135)).

The Long-term Climate Action Strategy was published on the 28th April 2023. In relation to electricity the Government commits to the full decarbonisation of the electricity system by 2050. In relation to the EU ETS, the Long-term Climate Action Strategy states that *"A strong price signal, as part of a reformed EU ETS, including progressively more restrictive rules on how many allowances will be available within the EU ETS, is expected to drive decarbonisation over the coming decade by increasing the cost to firms in the EU ETS of doing nothing to reduce their emissions"* (DECC, 2023). The Long-term Climate Action Strategy 2024 (DECC, 2024), published in August 2024, outlines a range of policies and strategies to address GHG emissions. In relation to electricity the Government commits to the full decarbonisation of the electricity system by 2050 by means of a range of measures including flexibility, grid expansion and increase in renewable power capacity.

The 2025 Climate Action Plan (CAP25) (DECC, 2025) builds on CAP24 with further specific details on the actions required to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme

² <https://acrobat.adobe.com/id/urn:aaid:sc:EU:9eb53277-d503-4d12-944f-3855a47f366f>

for Government and set out in the Climate Act 2021. There is more specific focus on the roadmap to align with the legally binding economy-wide carbon budgets and sectoral ceilings compared to previous climate action plans.

CAP25 states that there has been a steady decline in annual emissions from 9.89 MtCO₂eq in 2021 to 7.56 MtCO₂eq in 2023. While the EPA report "*Ireland's Greenhouse Gas Emissions Projections – 2024 – 2055*" (EPA, 2025) indicates that compliance with the electricity sectoral ceiling is likely in the period 2021 to 2025 it does suggest that an overshoot of over 1.6 MtCO₂eq may occur in the second period 2026 to 2030.

CAP25 in tandem with the *Long-term Strategy on Greenhouse Gas Emissions Reductions* will set the strategic direction for meeting Ireland's climate targets, with CAP25 assisting in delivering the required greenhouse gas emissions abatement to meet the climate targets.

In terms of the unallocated savings gaps first identified in CAP21, CAP25 has set out an approach to deal with these unallocated savings no later than 2025. The approach is focused on exploring emerging technologies where there is evidence of technical/commercial readiness and the deployment of carbon removal technologies.

In the Electricity Sector, CAP25 states that corrective actions to accelerate renewable electricity generation and grid flexibility, and manage electricity demand growth, were implemented in 2023. The "*Future Framework for Offshore Renewable Energy Policy Statement*" (DECC, 2024) was published in May 2024 and sets out key actions to deliver a potential 20 GW of offshore wind capacity by 2040 and a potential 37GW by 2050.

CAP25 also includes targeted actions to decarbonise industrial heat and support the transition to carbon-neutral manufacturing processes. Public sector leadership is strengthened through a new "*Buying Greener: Green Public Procurement Strategy and Action Plan (2024–2027)*" (DECC, 2024), the development of mandatory Climate Action Roadmaps, and enhanced emissions monitoring and reporting across government operations. The government has reinforced the public sector's responsibility to lead by example, particularly through climate-proofing operations and sustainable procurement initiatives. To support innovation and ensure future economic resilience, IDA Ireland continues to attract and support businesses investing in climate technologies and low-carbon solutions.

CAP25 highlights a significant 17% reduction in electricity emissions in early 2024, with wind power supplying nearly 40% of Ireland's total electricity demand and over 100,000 rooftop microgenerators connected to the grid. Investments are ongoing in grid reinforcement, offshore wind development, and interconnectors with France and the UK to enhance renewable generation capacity. According to legal and policy analysts, these developments place Ireland among the top countries globally in per capita wind generation, while continuing to expand domestic and community-based renewable energy. EirGrid, Enterprise Ireland and IDA Ireland have recently signed an MoU to collectively support offshore wind development in Ireland.

CAP25 also reinforces targets first outlined in CAP24 to reduce the embodied carbon of construction materials, with a 10% reduction by 2025 and 30% reduction by 2030 for materials produced and used in Ireland. Cement and high embodied carbon construction materials can be reduced through product substitution, reduced clinker content in cement and uptake of low-carbon construction methods, including those outlined in the Construction Industry Federation 2021 report "*Modern Methods of Construction*" (Construction Industry Federation, 2021). There also remains scope for the construction industry to use more timber in construction. In 2022, 24% of new construction in Ireland was built using timber frames to satisfy the demand for housing. Public bodies are now required under the Public Sector Mandate to use best practice project design to reduce embodied carbon; procure concretes with clinker replacements (lower carbon); and require that large construction projects produce a whole life cycle GHG emissions assessment. Further guidance on how the built environment can contribute to a circular, low-carbon

economy is detailed in the recently published *A Roadmap for a Resource Efficient Circular Built Environment* (IGBC, 2025).

Furthermore, CAP25 advances sector-specific measures in green procurement, electrification of transport and heat, and just transition (with the introduction of a Just Transition Commission) to support vulnerable communities and ensure equitable decarbonisation. While transport emissions increased by 0.3%, electric vehicles and the expanded use of biofuels are highlighted as the most effective short- to medium-term strategies for emissions reductions in the sector.

In summary, the CAP25 envisages that in tandem with the *Long-term Strategy on Greenhouse Gas Emissions Reductions*, and on the basis that carbon budgets and sectoral emission ceilings will assist with delivering the required greenhouse gas emissions abatement, the 2030 and 2050 climate targets are achievable. The current project is in line with this strategy as the GHG emissions associated with electricity supplied to the project will reduce in line with national policy to obtain net zero by 2050.

9.2.4 Climate Criteria For The Rating Of Impacts

9.2.4.1.1 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled "*PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document*" (TII, 2022) outlines a recommended approach for determining the significance of both the construction and operational phases of a development. This guidance document is now widely used to assess the climatic impact of a wide range of projects including industrial facilities. The approach is based on comparing the 'Do Something' scenario and the net project GHG emissions (i.e. Do Something – Do Minimum) to the relevant carbon budgets (Department of the Taoiseach, 2022). With the publication of the Climate Action Act in 2021, sectoral carbon budgets have been published for comparison with the Net CO₂ project GHG emissions from the Proposed Development and Overall Project. The Electricity sector emitted approximately 10.5 MtCO₂eq in 2018 and has a ceiling of 3 MtCO₂eq in 2030 which is a 72% reduction over this period (see Table 9.2).

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022) is based on IEMA guidance (IEMA, 2022) which is broadly consistent with the terminology contained within Figure 3.4 of the EPA's (2022) '*Guidelines on the information to be contained in Environmental Impact Assessment Reports*'.

The Institute of Environmental Management and Assessment (IEMA) guidance note on "*Assessing Greenhouse Gas Emissions and Evaluating their Significance – 2nd Edition*" (IEMA, 2022) states that:

"the crux of significance regarding impact on climate is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".

Mitigation has taken a leading role within the Guidance compared to the previous edition published in 2017. Early stakeholder engagement is key and therefore mitigation should be considered from the outset of the project and continue throughout the project's lifetime in order to maximise GHG emissions savings. The assessment aims to quantify the difference in GHG emissions between the proposed project and the baseline scenario (the alternative project/solution in place of the proposed project). This is done by calculating the difference in whole life net GHG emissions between the two options. The IEMA EIA guidance (IEMA, 2022) does not recommend a particular approach for this due to variations of situations but instead it sets out advice for the key common components necessary for undertaking a GHG emissions assessment. During the assessment IEMA recommend use of a reasonable worst-case scenario rather than an absolute worst-case scenario. The IEMA Guidance (IEMA, 2022) states that a GHG emissions assessment should incorporate the following steps into any climate assessment:

1. Set the scope and boundaries of the GHG assessment;
2. Develop the baseline;
3. Decide upon the emissions calculation methodologies;
4. Data collection;
5. Calculate/determine the GHG emissions inventory; and
6. Consider mitigation opportunities and repeat steps 4 & 5.

Activities that do not significantly change the result of the assessment can be excluded where expected emissions are less than 1% of total emissions, and where all such exclusions should be clearly stated and total a maximum of 5% of total emissions.

When considering the cumulative assessment, all global cumulative GHG sources are relevant to the effect on climate change. As a result, the effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed (IEMA, 2022). This is due to the fact that there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other. The following section details the specific appraisal methods utilised in order to complete the assessment in accordance with the IEMA Guidance (IEMA, 2022).

9.2.5 Construction Phase Methodology

The impact of the traffic related construction phase of the development on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating construction activities associated with the Proposed Development and Overall Project. The traffic associated with the construction phase of the Proposed Development was investigated using the methodology outlined in the TII publication *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022b). As outlined in Section 9.5.3, the traffic associated with the phase of the Proposed Development will be below the assessment criteria. An assessment has also been undertaken of the likely carbon to be generated during the construction phase (entitled “1(e) A4 and A5 Carbon Assessment” by Henry J Lyons which was prepared as part of the further information submission dated November 2023).

9.2.6 Operational Phase Methodology

9.2.6.1 Greenhouse Gas Assessment (GHGA)

The assessment for the Permitted Development, the Proposed Development and the Overall Project is based on the use of electricity to power the facility in addition to the emergency operation and testing/maintenance of the backup generators for 72 hours per year as outlined in Chapter 9 of the EIAR. In the event of a loss of power supply (e.g. temporary grid blackout) the emergency back-up generators will be utilised to maintain power supply.

When assessing significance, the *2010 IEMA Principles Series on Climate Change Mitigation & EIA* (IEMA, 2010) defines three overarching principles:

- The GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect;
- The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive (e.g. human health, biodiversity, water, land use, air quality); and
- GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit; as such any GHG emissions or reductions from a project might be considered to be significant. The environmental limit is the national global GHG emission budget that defines a level of dangerous climate change, and any GHG emission that contributes to exceedance of that budget or threatens efforts to stay within it can be considered as significant.

The 2022 Guidance (IEMA, 2022) document builds on those principles with three points:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. . In relation to climate, the earth as a whole is a highly sensitive environment whilst the magnitude of impact is outlined below with the project being assessed against the recommended IEMA (IEMA, 2022) significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

- Major or moderate adverse impact (significant): A project that follows a 'business-as-usual' or 'do minimum' approach and is not compatible with the net zero³ trajectory by 2050 or sectoral based transition to net zero targets, results in a significant adverse effect. It is down to the consultant completing the assessment to differentiate between the 'level' of significant adverse effects e.g. 'moderate' or 'major' adverse effects. A project's impact can shift from significant adverse to nonsignificant effects by incorporating mitigation measures that substantially improve on business-as-usual and meet or exceed the science-based emissions trajectory of ongoing but declining emissions towards net zero. Meeting the minimum standards set through existing policy or regulation cannot necessarily be taken as evidence of avoiding a significant adverse effect. This is particularly true where policy lags behind the necessary levels of GHG emission reductions for a science based 1.5°C compatible trajectory towards net zero.
- Minor adverse impact (not significant): A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures to achieve that has a minor adverse effect that is not significant. The project may have residual impacts but is doing enough to align with and contribute to the relevant transition scenario. A 'minor adverse' or 'negligible' non-significant effect conclusion does not necessarily refer to the magnitude of GHG emissions being carbon neutral⁴ (i.e. zero on balance) but refers to the likelihood of avoiding severe climate change and achieving net zero by 2050. A 'minor adverse' effect or better is a high bar and indicates exemplary performance where a project meets or exceeds measures to achieve net zero earlier than 2050.
- Negligible Impact (not significant): A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory, and has minimal residual emissions, is assessed as having a negligible effect that is not significant.
- Beneficial Impact (significant): A project that causes GHG emissions to be avoided or removed from the atmosphere has a beneficial effect that is significant. Only projects that actively reverse (rather than only reduce) the risk of severe climate change can be judged as having a beneficial effect.

TII (TII, 2022) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

³ Net Zero: "When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period." Net zero is achieved where emissions are first reduced in line with a 'science-based' trajectory with any residual emissions neutralised through offsets.

⁴ Carbon Neutral: "When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period irrespective of the time period or magnitude of offsets required."

Significance is determined using the criteria outlined in Table 9.4 (derived from Table 6.7 of PE-ENV-01104 (TII 2022)) along with consideration of the following two factors:

- 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.

Table 9.4 GHGA Significance Criteria

Effects	Significance level Description	Description
Significant adverse	Major adverse	<ul style="list-style-type: none"> ▶ The project’s GHG impacts are not mitigated. ▶ The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and ▶ No meaningful absolute contribution to Ireland’s trajectory towards net zero⁵.
	Moderate adverse	<ul style="list-style-type: none"> ▶ The project’s GHG impacts are partially mitigated. ▶ The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and ▶ Falls short of full contribution to Ireland’s trajectory towards net zero.
Not significant	Minor adverse	<ul style="list-style-type: none"> ▶ The project’s GHG impacts are mitigated through ‘good practice’ measures. ▶ The project has complied with existing and emerging policy requirements; and ▶ Fully in line to achieve Ireland’s trajectory towards net zero.
	Negligible	<ul style="list-style-type: none"> ▶ 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	<ul style="list-style-type: none"> ▶ The project’s net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. ▶ The project has gone well beyond existing and emerging policy requirements; and ▶ Well ‘ahead of the curve’ for Ireland’s trajectory towards net zero, provides a positive climate impact.

The impact of the operational phase of the Proposed Development and Overall Project on climate was determined by an assessment of the indirect CO₂ emissions associated with electricity and the direct CO₂ emissions associated with the operation of the backup generators over the period 2025 (assumed first full year of operation) to 2030. The details and results of the assessment are provided in Section 9.7.3.

⁵ Net Zero: “When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.” Net zero is achieved where emissions are first reduced in line with a ‘science-based’ trajectory with any residual emissions neutralised through offsets.

9.2.6.2 Climate Change Risk Assessment (CCRA)

The operational phase assessment involves determining the vulnerability of the Proposed Development and Overall Project to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability. PE-ENV-01104 (TII, 2022) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- EU (2021) Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 9.3, future climate change modelling and input from other experts working on the Proposed Development and Overall Project (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The project asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022) provide the below list of asset categories and climate hazards to be considered. The asset categories will vary for project type and need to be determined on a project-by-project basis.

- **Asset categories** - Pavements; drainage; structures; utilities; landscaping; signs; light posts; buildings; and fences.
- **Climate hazards** - Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High sensitivity:** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium sensitivity:** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low sensitivity:** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type for example: flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High exposure:** It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium exposure:** It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low exposure:** It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the Proposed Development and Overall Project to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the Proposed Development and Overall Project to various climate hazards.

$$\text{Vulnerability} = \text{Sensitivity} \times \text{Exposure}$$

The vulnerability assessment takes any proposed mitigation into account. Table 9.5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. The impact from climate change on the Proposed Development and Overall Project can therefore be considered to be not significant.

Where residual medium or high vulnerabilities exist, the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks.

Table 9.5 Vulnerability Matrix

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

9.2.7 Decommissioning Phase Methodology

The impact of the decommissioning phase of the development on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating decommissioning activities associated with the Proposed Development and Overall Project.

9.2.8 Forecasting Methods and Difficulties Encountered

There were no difficulties encountered when completing this assessment.

9.3 Receiving Environment

Climate is defined by the IPCC (IPCC, 2023) as the average weather over a period of time, whilst climate change is a significant change to the average weather. Climate change is a natural phenomenon but in the industrial age human activities, through the release of GHGs, have impacted on the climate (EPA, 2023a). The release of anthropogenic GHGs is altering the Earth’s atmosphere resulting in a ‘Greenhouse Effect’. This effect is causing an increase in the atmosphere’s heat trapping abilities resulting in increased average global temperatures over the past number of decades. The release of CO₂ as a result of burning fossil fuels, has been one of the leading factors in the increase of the ‘Greenhouse Effect’. The most significant GHGs are CO₂, methane (CH₄) and nitrous oxide (N₂O).

For the purposes of this assessment, the definition outlined in Council Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing

Directives 2001/77/EC and 2003/30/EC (hereafter referred to as the Renewable Energy Directive) for GHGs has been used. In Annex V, C. Methodology Point 5 of the Renewable Energy Directive the relevant GHGs are defined as CO₂, CH₄ and N₂O. CO₂ accounted for 63.7% of total GHG emissions in Ireland in 2018 while CH₄ and N₂O combined accounted for 34.4%. The main source of CH₄ and N₂O is from the agricultural sector. Perfluorocarbons are not relevant in the context of the Renewable Energy Directive as they are not emitted in significant quantities by energy sources.

GHGs have different efficiencies in retaining solar energy in the atmosphere and different lifetimes in the atmosphere. In order to compare different GHGs, emissions are calculated on the basis of their Global Warming Potential (GWPs) over a 100-year period, giving a measure of their relative heating effect in the atmosphere. The IPCC AR6 Synthesis Report: Climate Change 2021 (IPCC, 2023) sets out the global warming potential for a 100-year time period (GWP100) for CO₂ as the basic unit (GWP = 1) whereas CH₄ has a global warming potential equivalent to 29.8 units of CO₂ (for fossil sources) and N₂O has a GWP100 of 273. These values have been refined since the AR5 report.

9.3.1 Greenhouse Gas Emissions

TII guidance PE-ENV-01104 (TII, 2022) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline (i.e. Do Minimum scenarios).

Given the circumstances of Ireland’s declaration of a climate and biodiversity emergency in May 2019 and the November 2019 European Parliament approval of a resolution declaring a climate and environment emergency in Europe, in conjunction with Ireland’s current failure to meet its EU binding targets under the GHG Regulation, changes in GHG emissions either beneficially or adversely are of more significance than previously viewed prior to these declarations. Thus, the baseline climatic environment should be considered a highly sensitive environment for the assessment of impacts.

9.3.1.1 Existing GHG Emissions Baseline

Anthropogenic emissions of greenhouse gases (GHGs) in Ireland included in the European Union’s Effort Sharing Regulation (ESR) (EU 2018/842) are outlined in the most recent review by the EPA which details emissions up to 2023 (EPA, 2024b). The greenhouse gas emission inventory for 2023 is the third of ten years over which compliance with targets set in the ESR will be assessed. This Regulation sets 2030 targets for emissions outside of the Emissions Trading System (known as ESR emissions) and annual binding national limits for the period 2021-2030. Ireland’s target is to reduce ESR emissions by 42% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. Ireland’s 2023 GHG ESR emissions are 42.79 Mt CO₂eq, this is 2.27 Mt CO₂eq more than the annual limit for 2023 (EPA, 2024b). Agriculture continues to be the largest contributor to overall emissions at 37.8% of the total. Transport, energy industries and the residential sector are the next largest contributors, at 21.4%, 14.3% and 9.7%, respectively.

National total emissions (including LULUCF) for 2023 are 60.62 Mt CO₂eq (see Table 9.6), thus 2021 to 2023 have used 63.9% of the 295 Mt CO₂eq Carbon Budget for the five-year period 2021-2025. This leaves 36.1% of the budget available for the succeeding two years, requiring an 8.3% average annual emissions reduction from 2024-2025 to stay within budget.

Table 9.6 Trends in National GHG Emissions in 2021 – 2023

Sector <small>Note 1</small>	2021 Emissions (Mt CO₂e)	2022 Emissions (Mt CO₂e)	2023 Emissions (Mt CO₂e)	Total Budget (Mt CO₂e) (2021-2025)	% Budget 2021-2025 used	Annual change 2022 to 2023

Electricity	10.19	10.00	7.85	40.0	67.9%	-21.6%
Transport	11.089	11.760	11.791	54.0	64.1%	0.3%
Buildings (Residential)	6.868	5.753	5.346	29.0	62.0%	-7.1%
Buildings (Commercial and Public)	1.444	1.447	1.409	7.0	61.4%	-2.6%
Industry	7.093	6.622	6.288	30.0	66.7%	-5.0%
Agriculture	21.940	21.795	20.782	106.0	60.9%	-4.6%
Other ^{Note 2}	1.864	1.931	1.832	9.0	62.5%	-5.1%
LULUCF	4.628	3.983	5.614			40.9%
Total including LULUCF	64.819	62.986	60.620	295.0	63.9%	-3.8%

Note 1 Reproduced from latest emissions data on the EPA website July 2024 (EPA, 2024a).

Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

9.3.1.2 Future GHG Baseline

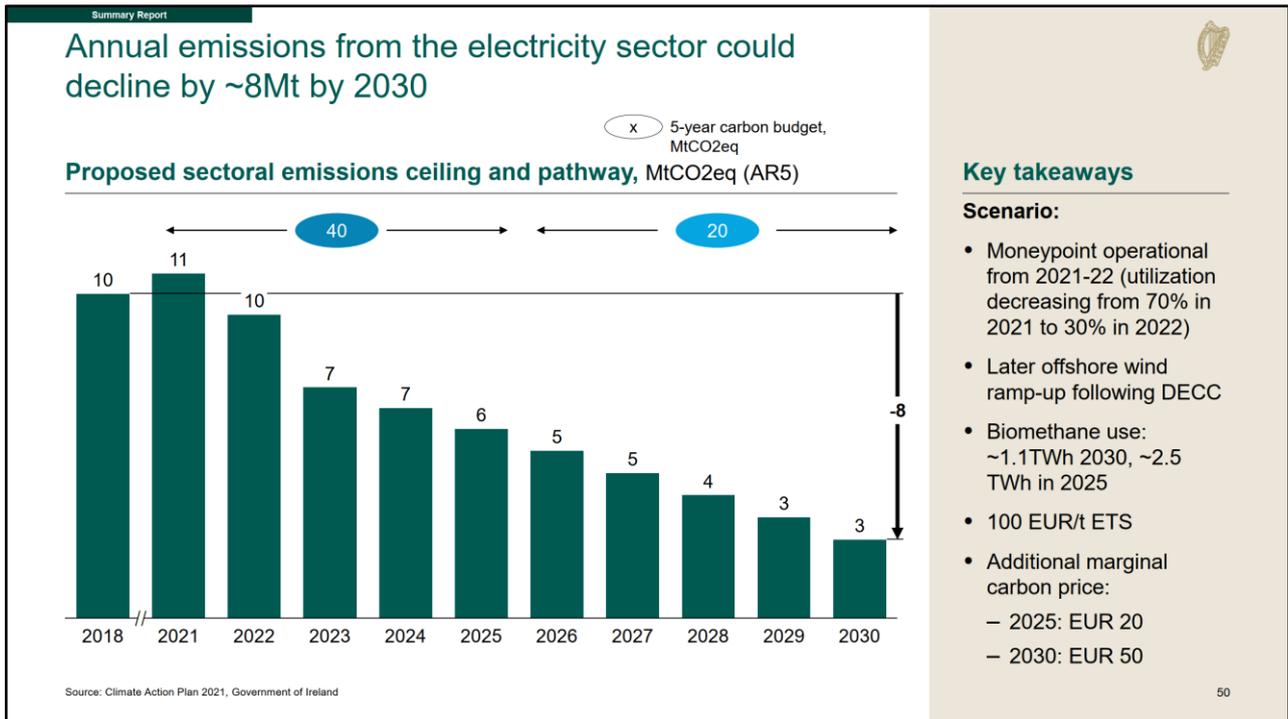
The EPA 2024 GHG Emissions Projections Report for 2024 – 2055 (EPA, 2025) notes that there is a long-term projected decrease in greenhouse gas emissions as a result of inclusion of new climate mitigation policies and measures that formed part of the latest Government plans (such as CAP24/CAP25) which have a realistic pathway in place for implementation. Implementation of these is classed as a “*With Additional Measures*” scenario for future scenarios. A change from generating electricity using coal and peat to wind power and diesel vehicle engines to electric vehicle engines are envisaged under this scenario. While emissions are projected to decrease in these areas, emissions from agriculture are projected to grow steadily due to an increase in animal numbers. However, over the period 2018 to 2030 Ireland is projected to reduce emissions by 22% (and 26% using available flexible mechanisms⁶) which is less than the 42% reduction target under the EU’s Effort Sharing Regulations (Regulation (EU) 2018/842) 2030 targets for the “*With Additional Measures*” scenario.

The EPA has reported that the 2023 energy industries GHG emissions have decreased from 10.08 Mtonnes in 2022 to 7.8 Mtonnes in 2023 (EPA, 2024a) which is a record 21.6% reduction. Comparing the 2023 reported data to the projected data undertaken for the Sectoral Emission Ceiling in Figure 9.5 indicates that the actual emissions are slightly higher than the target value in 2023. In order to comply with the 2021-2025 target annual reductions of 10.3% are required in 2024 and 2025.

⁶ [Ireland is projected to exceed its National and EU climate targets | Environmental Protection Agency](#)

“These flexibilities are the use of EU Emissions Trading System allowances and credit from action undertaken in the Land use, Land use Change and Forestry (LULUCF) sector. Flexibilities under the Effort Sharing Regulation include the allowance by eligible Member States to achieve their national targets by covering some emissions with EU ETS allowances which would normally have been auctioned. EU-wide, this cannot be more than a combined total of 100 million tonnes CO₂ over the period 2021-2030. The ETS flexibility allows Ireland to transfer emissions of up to 4 per cent of 2005 levels per annum, or 19.1 Mt CO₂eq from the non-ETS to ETS sector, reducing the mitigation requirement in the non-ETS sector while cancelling the corresponding ETS allowances. Also, to stimulate additional action in the land use, land-use change and forestry (LULUCF) sector, Member States can use up to a combined (EU-wide) total of 262 million credits over the entire period 2021-2030 to comply with their national targets. The LULUCF flexibility allows for Ireland to account for greenhouse gas removals of up to 26.8 Mt CO₂eq over two compliance periods 2021-2025 and 2026-2030.”

Figure 9.5 Proposed sectoral emissions ceiling and pathway 2018 to 2030 (DECC, 2022)



The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022c) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, "whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".

A report from MaREI (MaREI, Sept 2024) states that the recently published *Climate Change Advisory Board Annual Review 2025: Electricity* (CCAB, 2025), based on the EPA's 2023 data combined with the latest emissions data from the EU ETS for 2024 estimated that 83.6% of the electricity sectoral emissions ceiling has been used in the first 4 years of the five-year sectoral emissions period. Thus, 2024 used 15.7% of the sectoral budget and given that energy-related emissions have fallen each year for the last 3 years, and are down 11% compared to 2021 levels (SEAI, 2025) it is likely that 2025 will have emissions of a similar (or lower) magnitude to 2024 and thus it is likely that the first electricity sectoral budget period (2021-2025) will be approximately 99% of the budget and thus in compliance. This analysis has recently been supported by work undertaken by MaREI at the University of Cork in terms of both sectoral emission ceilings and the first carbon budget⁷

"Ireland is currently on track to meet the first carbon budget (CB1) when we compare the last three years of data with a greenhouse gas emissions pathway that aligns with CB1. The CB1 pathway ensures Ireland remains within the statutory target of 295 MtCO₂eq in the time period 2021-2025" (MaREI, Sept 2024).

The recently published EPA report "Ireland's Greenhouse Gas Emissions Projections - 2024-2055" (EPA, 2025) states that, based on the WAM scenario, that there will be a 68% reduction in electricity associated GHG emissions between 2018 and 2030 (EPA, 2025). The report also confirms that over the period 2023 to 2030, electricity under the WEM scenario will reduce from 7.845 to 4.4 Mt CO₂eq whilst under the WAM scenario will reduce from 7.845 to 3.4 Mt CO₂eq. The report states:

⁷ <https://acrobat.adobe.com/id/urn:aaid:sc:EU:9eb53277-d503-4d12-944f-3855a47f366f>

"There was a significant drop in emissions from the Energy Industries sector between 2022 and 2023 (down 2.1 Mt CO₂eq or 21.4%). This reduction in emissions was partly due to a 12-fold increase in the amount of imported electricity (9.5% of electricity supply in 2023), in combination with an increase in the share of renewable energy from 38.6% in 2022 to 40.7% in 2023. This step change in interconnector behaviour is projected to increase to 22% in WEM and 19% in WAM by 2030"(EPA, 2025 (Section 4.3))

The EPA Report (EPA, 2025) also confirms that the electricity sector is likely to achieve the first sectoral emission ceiling target:

"The sectoral ceilings projected to be achieved in the first budget period (2021-25) are in the Electricity, Buildings and 'Other' sectors"(EPA, 2025 (Section 3.2.2))

The future baseline will be determined by whether Ireland meets its targets set out in the CAP25, and future CAPs, alongside binding 2030 EU targets. The future baseline in relation to electricity will be determined by how the national grid decarbonises over the period 2025-2050. Decarbonisation of the national grid will be dependent on policies which affect wind power (both onshore and offshore), solar, hydrogen and other energy sources, all of which will have a direct impact on the trajectory of the road to net zero GHG emissions. Policy decisions and market forces in relation to the import of electricity will also be important on the path to net zero electricity by 2050. Ireland has set a target of 80% renewables by 2030 in CAP25 (DECC, 2025) and net zero GHG emissions by 2050, also outlined in CAP25 (DECC, 2025). However, for the purposes of this assessment a renewable rate of 68.3% has been assumed for 2030.

9.3.2 Vulnerability of the Project to Climate Change

The Proposed Development and Overall Project study area for assessing a project's vulnerability to climate change should be based on the construction footprint / project boundary as this is where the facility will be located. Impacts as a result of climate change involve increases in global temperatures and increases in the number of rainfall days per year. Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east (EPA, 2015). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the Proposed Development and Overall Project:

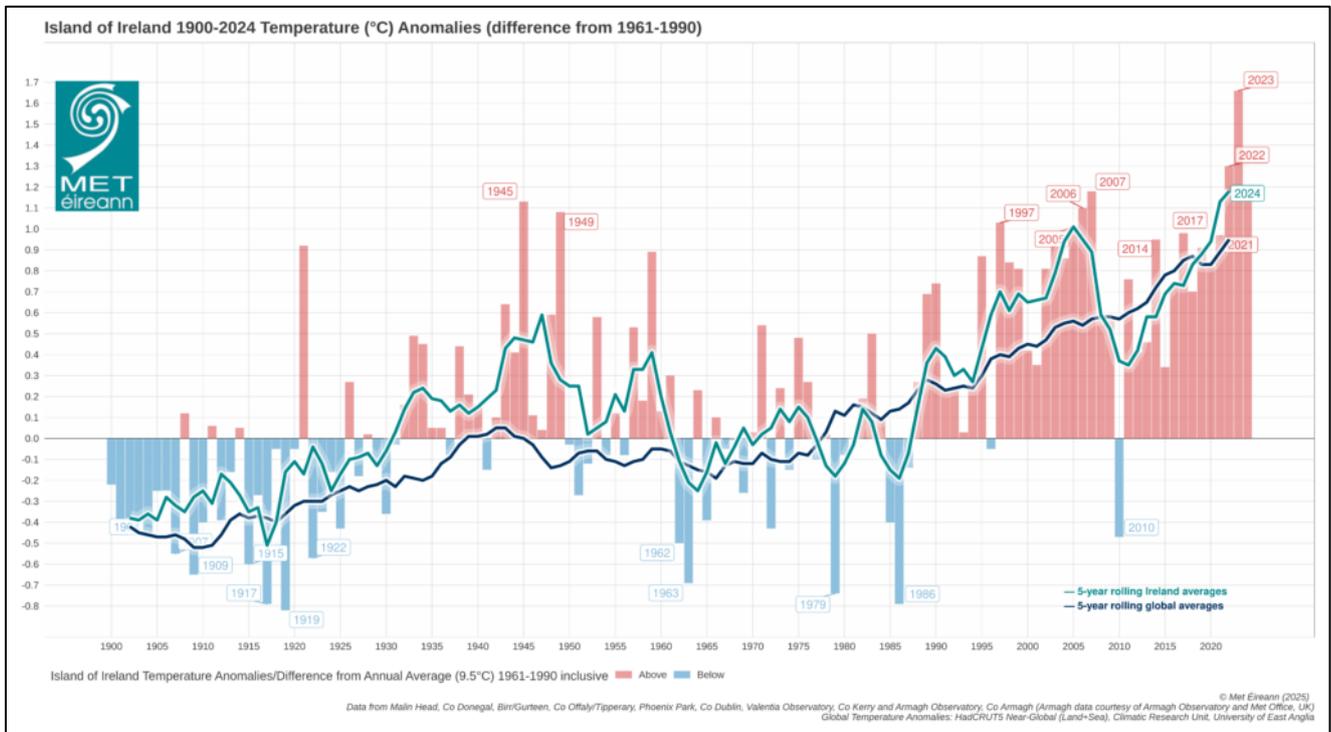
- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

The region of the Proposed Development and Overall Project has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Dublin Airport is the nearest weather and climate monitoring station to the Proposed Development and Overall Project that has meteorological data recorded for the 30-year period from 1991 to 2020 (this is the most recent data available). Dublin Airport meteorological station is located approximately 2 km east of the Proposed Development and Overall Project at the closest point. Meteorological data recorded at Dublin Airport over the 30-year period from 1991 to 2020 (see Table 9.7) indicates that the wettest months were August and October, and the driest month on average was February. July was the warmest month with a mean temperature of 15.6°C.

The recent weather patterns and extreme weather events recorded by Met Éireann have been analysed to determine the potential for extreme weather impacting on the facility (Met Éireann, 2025b). A noticeable feature of the recent weather has been an increase in the frequency and severity of storms with notable events including Storm Darwin in February 2014, Storm Ellen in August 2020, Storm Barra in December 2021 and Storm Eunice in February 2022. The maximum wind gust for Dublin Airport for Storm Barra peaked at 100 km/hr with a 10-minute speed of 72 km/hr.

Met Éireann’s 2024 Climate Statement (Met Éireann, 2025) states 2024’s average shaded air temperature in Ireland is provisionally 10.72°C, which is 1.17°C above the 1961-1990 long-term average. 2023 was the warmest year on record; however, at 0.49°C warmer than 2024 (see Figure 9.6).

Figure 9.6 1900-2024 Temperature (°C) Temperature Anomalies (Differences from 1961-1990)



The year 2024 had near-average rainfall, with the east of the country experiencing the driest conditions. Sea surface temperatures (SST) were high with 2024 being the fourth warmest year on record.

Recent weather patterns and records of extreme weather events recorded by Met Éireann have been reviewed. Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. This temperature change means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

The most recent future climate predictions undertaken by Met Éireann have been published in 'Ireland’s Climate: the road ahead (Met Eireann, 2013) based on four scenarios (RCP2.6, RCP4.5, RCP6.0 and RCP8.5) which is named with reference to a range of radiative forcing values for the year 2100 (i.e. 2.6, 4.5, 6.0 and 8.5 W/m² (watts per square metre)) respectively with focus on RCP4.5 (medium-low) and RCP8.5 (high) scenarios. In terms of mean temperatures, it is predicted that increases of between 1°C to 3°C will occur under RCP4.5 rising to 2°C to 4°C under RCP8.5. Warm extremes are expected to rise by 2°C to 3°C (RCP4.5) but by up to 5°C under RCP8.5.

The EPA sponsored Report No.159 'Ensemble of regional climate model projections for Ireland'(EPA, 2015) which has projected significant decreases in mean annual, spring and summer precipitation amounts with extended dry periods. The decreases are largest for summer, with reductions ranging from 0% to 13% and from 3% to 20% for the medium-to-low and high emission scenarios, respectively. Conversely increases of heavy precipitation of up to 20% are projected to occur during the winter and autumn months.

The number of extended dry periods is projected to increase substantially by mid-century during autumn and summer.

In relation to storms, *Report No.159 – Ensemble of regional climate model projections for Ireland* (EPA, 2015) indicates that the overall number of North Atlantic cyclones is projected to decrease by 10% coinciding with a decrease in average mean sea-level pressure of 1.5 hectopascals (hPa) for all seasons by mid-century. Wind energy is also predicted to decrease for spring, summer and autumn with a projected increase in winter.

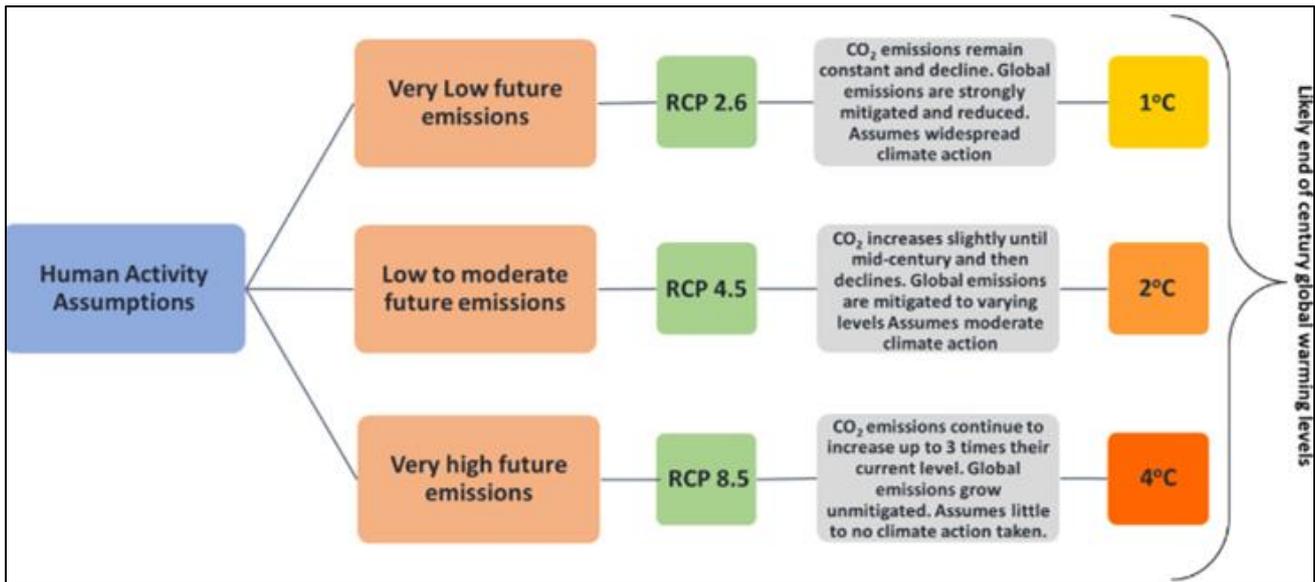
EPA's *State of the Irish Environment Report 2024 (Chapter 4: Climate Change)* (EPA, 2024c) notes that projections show that full implementation of additional policies and measures, outlined in the 2025 Climate Action Plan, will result in a reduction in Ireland's total GHG emissions by up to 29 per cent by 2030 compared with 2018 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The report (EPA, 2024c) underlines that the next decade needs to be one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets and that Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.5°C – 2.0°C. In addition, Ireland needs to be invested in adaptation that can protect Ireland from future climatic impacts.

Future climate predictions undertaken by the EPA have been published in *Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach* (EPA, 2020b). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060). Mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There will be a substantial decrease of approximately 50% which is projected for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric. Wind turbines need a specific range of wind speeds to operate within and droughts or low ground water levels may impact hydroelectric energy generating sites. More frequent storms have the potential to damage the communication networks requiring additional investment to create resilience within the network.

Thus, in summary, the recent research into the changing climate as outlined above shows that the facility will need to incorporate into its design the likely future increases in weather variability including increased frequency and intensity of storms and high winds, increased temperatures in summer, the potential for heat waves and flooding from heavy precipitation events.

The research project TRANSLATE (Met Éireann, 2023) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for "least" (RCP2.6), "more" (RCP4.5) or "most" (RCP8.5) climate change, as shown in Figure 9.7.

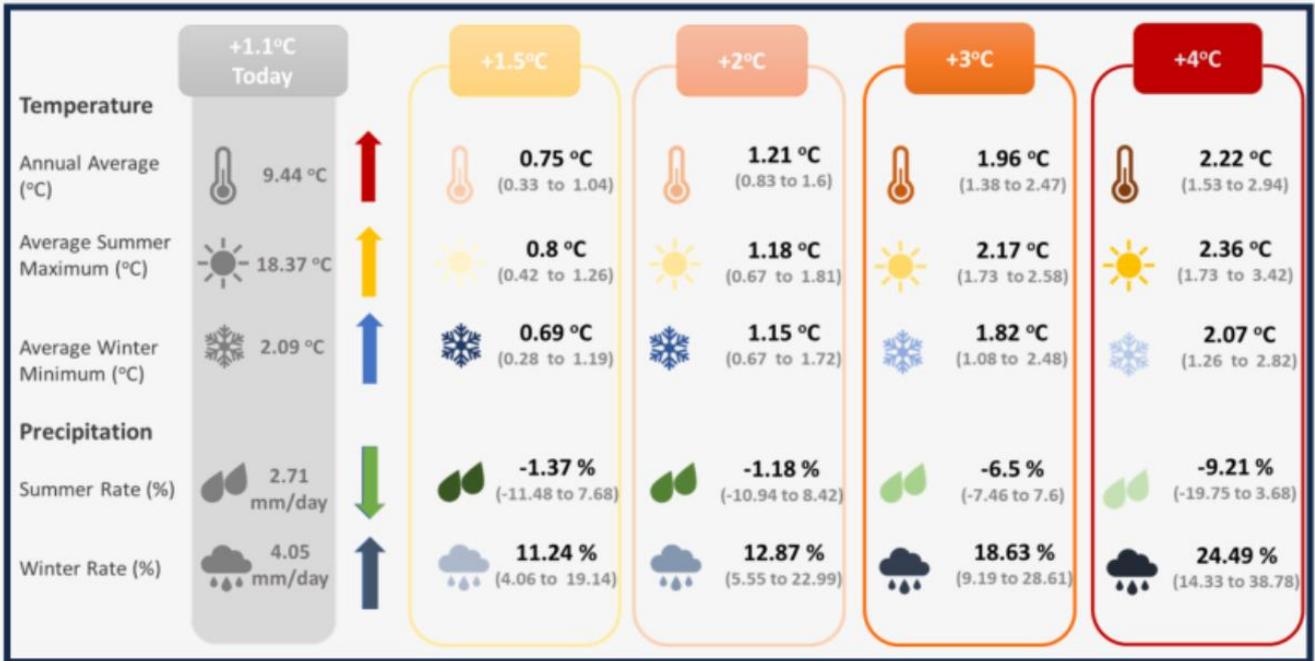
Figure 9.7 Representative Concentration Pathways associated emission levels



a. Source: TRANSLATE project storymap (Met Éireann 2025a)

The research project TRANSLATE (Met Éireann, 2025a) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland’s climate could change as global temperatures increase to 1.5°C, 2°C, 2.5°C, 3°C or 4°C. Projections broadly agree with previous projections for Ireland. Ireland climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30% - 40% by 2100, resulting in cooler North Atlantic sea surface temperatures (SST) (Met Éireann, 2025a). Met Éireann projects that Ireland is nevertheless projected to continue to warm, although the influence of this cool influence may lead to reduced warming compared with continental Europe. AMOC weakening is expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more significant changes, for example on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24% as shown in Figure 9.8. Future projects also include a 10-fold increase in the frequency of summer nights (values >15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of five consecutive days where the daily maximum temperature is greater than 25°C.

Figure 9.8 Change of climate variables for Ireland for different Global warming thresholds



a. Source: TRANSLATE project storymap (Met Éireann, 2023)

Table 9.7 Dublin Airport Historical Meteorological Data 1991-2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temperature (°C)													
mean daily max	8	8.5	10.1	12.3	14.8	17.7	19.5	19.1	16.9	13.6	10.3	8.3	13.3
mean daily min	2.3	2.2	3	4	6.6	9	11.3	11.2	9.5	7.1	4.3	2.6	6.1
mean temperature	5.2	5.3	6.6	8.2	10.7	13.3	15.4	15.1	13.2	10.4	7.3	5.5	9.7
absolute max.	16.4	16.2	18.6	21.7	23.2	26.4	27.1	27.2	25	20.9	17.5	15.4	27.2
min. maximum	-3.2	-0.6	-0.6	4.2	6.3	10.3	11.8	13.8	9.6	5.2	-1.9	-4.8	-4.8
max. minimum	11.8	11.9	11.9	12.5	14.6	15.8	17.6	18.1	19.1	15.9	12.8	12.9	19.1
absolute min.	-9.5	-7.9	-7.9	-5.6	-3	0.7	3.9	2.4	0.4	-4.7	-8.4	-12.2	-12.2
Relative Humidity (%)													
mean at 0900UTC	87	86.4	84	79.5	76.9	76.7	78.5	81	83.4	85.5	88.5	88	83
mean at 1500UTC	80.6	75.7	71	68.3	68	68.3	69	69.3	71.5	75.1	80.3	83.1	73.3
Sunshine (hours)													
mean daily duration	1.9	2.7	3.5	5.3	6.2	5.8	5.3	5.1	4.3	3.3	2.4	1.7	3.9
greatest daily duration	8.1	9.8	11.9	13.3	15.4	15.9	15.6	14.2	12.4	10.2	8.8	7.3	15.9
mean num. of days with no sun	9.1	6.2	4.7	2.5	2	1.9	1.4	1.5	2.6	4.8	7.3	10.5	54.6
Rainfall (mm)													
mean monthly total	62.6	48.8	52.7	54.1	59.5	66.7	56.2	73.3	59.5	79	72.9	72.7	758
greatest daily total	27.1	28.1	35.8	30.4	42.1	73.9	39.2	72.2	40.6	53.2	62.8	42.4	73.9
mean num. of days with $\geq 0.2\text{mm}$	17	15	17	15	15	14	16	16	15	17	17	17	191
mean num. of days with $\geq 1.0\text{mm}$	12	10	11	10	11	10	10	11	10	11	11	12	129
mean num. of days with $\geq 5.0\text{mm}$	4	3	3	3	3	3	3	4	4	4	4	4	42
Wind (knots)													
mean monthly speed	12.5	12	11.6	9.9	9.2	8.6	8.7	8.7	9.2	10.4	11	11.3	10.3
max. gust	80	73	66	59	58	53	54	56	59	69	66	76	80

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
max. mean 10-minute speed	53	49	45	39	39	38	36	37	36	51	43	55	55
mean num. of days with gales	2.3	1.5	1.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.8	1.3	8.2
Weather (mean no. of days with..)													
snow or sleet	4.6	4.2	2.8	1.2	0.2	0	0	0	0	0	0.8	2.9	16.6
snow lying at 0900UTC	1.6	0.6	0.1	0	0	0	0	0	0	0	0.1	0.9	3.4
hail	1.2	1.5	2	1.9	1.3	0.1	0.2	0.1	0.1	0.3	0.3	0.7	9.7
thunder	0.3	0.2	0.3	0.2	0.9	0.8	0.8	0.9	0.3	0.3	0.2	0.2	5.5
fog	3.3	3.1	3.6	3.6	3.4	2.8	3.3	3.8	4.2	3.2	3.1	4.1	41.5

9.4 Characteristics of the Proposed Development

The purpose of this section is to provide an overview of the key relevant details of the construction phase, operational phase and decommissioning phase of the Proposed Development and Overall Project with a focus on the key sources of GHG emissions that may occur. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development and Overall Project. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, please refer to Chapter 2 of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant document in order to define the Proposed Development and Overall Project.

9.4.1 Construction Phase

The Proposed Development will comprise construction of three data centres and associated ancillary development. The key civil engineering works which will have a potential impact on climate during construction are summarised below:

- (i) During construction, soil will be generated as part of the site preparation works and during excavation for installation of foundations, drainage services and ancillary infrastructure;
- (ii) Embodied carbon associated with the raw materials used in the construction of the Proposed Development and Overall Project buildings including cement and steel will lead to indirect GHG emissions at the point of manufacture;
- (iii) Following completion of the building shell, commissioning of the mechanical and electrical equipment is undertaken;
- (iv) Infilling and landscaping will be undertaken. Spoil generated during site preparation will be re-used where possible;
- (v) Temporary storage of construction materials and fuels; and
- (vi) Construction traffic accessing the site will emit air pollutants and greenhouse gases during transport.

A draft construction management plan has been compiled for the construction phase of the Proposed Development which will help to minimise the release of GHG emissions during construction (as outlined in A104-CSC-ZZ-XX-RP-C-0003-P3 Outline Construction and Environmental Management Plan) which was submitted as part of the planning application. The mitigation measures which will be employed in regard to GHG emission are:

- All vehicles will be required to switch off engines when stationary (no idling);
- All vehicles will be serviced and maintained to ensure emissions are minimised;
- Building materials will be reused within the extent of the Proposed Development; and
- Where practicable, building materials will be sourced locally (within 20-25km) to reduce the embodied emissions associated with transport.

The measures will be subject to refinement by the contractor prior to construction although the refinement will not affect the committed mitigation measures.

An assessment has also been undertaken of the likely carbon to be generated during the construction phase (entitled "1(e) A4 and A5 Carbon Assessment" by Henry J Lyons which was prepared as part of the

further information submission in November 2023). The mitigation measures which will be employed in regard to embodied carbon emission are:

- Materials with a high embodied carbon will be replaced with materials with lower embodied carbon,
- Site material wastage will be reduced by 50% compared to the baseline scenario,
- Onsite electricity and fuel usage will be reduced by 50% during the construction phase.

9.4.2 Operational Phase

The key works which will have a potential impact on climate during operation of the Proposed Development and Overall Project are summarised below. Other works such as low levels of site traffic will have an insignificant impact on climate:

- (i) The scheduled testing of the back-up generators in the data centres will release GHG emissions;
- (ii) The emergency operation of the back-up generators for the data centres in the event of a power outage would release GHG emissions. An outage may occur due to scheduled maintenance of the electricity grid or an interruption to electricity.
- (iii) Road traffic accessing the site will emit greenhouse gases. However, the operational phase of the Proposed Development and Overall Project is not expected to contribute a significant volume of additional traffic on the local road network as outlined in the Traffic and Transportation Chapter of the EIAR (Chapter 13). Therefore, no local GHG assessment of the traffic impact is required for this development; and
- (iv) The indirect impact of GHG emissions from electricity to operate the data centre have the potential to impact climate. These emissions have been assessed in detail in Section 9.7.3.

9.4.3 Decommissioning Phase

The Proposed Development and Overall Project will comprise decommissioning of all onsite data centres and associated ancillary development.

9.5 Potential Impacts of the Proposed Development

9.5.1 Do Nothing – Construction Phase

As outlined in the EIAR Guidelines (EPA, 2022), the 'do-nothing' alternative is a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed. The Do Nothing scenario includes the Permitted Development which has already been constructed. In the Do Nothing construction phase scenario, therefore, greenhouse gas emissions at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

The Do Nothing scenario is found to be ***direct, long-term, neutral*** which is overall ***not significant***.

9.5.2 Do Nothing – Operational Phase

Under the Do Nothing Scenario GHG emissions will take place from the Permitted Development. The main emissions will be associated with electricity associated with the operation of the existing data centre and infrequent operation of the backup generators.

The indirect (due to electricity) and direct (due to diesel usage) CO₂ emissions associated with the operation of the Permitted Development has been assessed below in the context of Ireland's national annual CO₂ emissions. The Sustainable Energy Authority of Ireland (SEAI, 2025) states on its website that

the average CO₂ emission factor for electricity generated in Ireland was 254 gCO₂/kWh in 2023 whilst for diesel the average CO₂ emission factor in Ireland was 263.9 gCO₂/kWh in 2023.

Thus, for Year 2025, the GHG emissions from electricity will be based on the expected GHG emission rate in 2025 taking into the account the EPA projections out to 2030 (EPA, 2025) of a renewable fraction of 68.3% by 2030. The expected values for each year from 2025 to 2030 are shown below in Table 9.8.

Table 9.8 Carbon Intensity of Electricity From 2025 - 2030

Year	Electricity ^{Note 1} (g CO ₂ / kWh)
2025	220
2026	203
2027	186
2028	169
2029	152
2030	135

Note 1 Based on a carbon intensity of 254 g CO₂ / kWh in 2023 and assuming linear interpolation to 135 g CO₂ / kWh by 2030 and net zero by 2050. The 2030 target is equivalent to reaching 68.3% renewable electricity by 2030 as outlined by the EPA (EPA, 2025) whilst net zero is the 2050 target as outlined in CAP25.

For the Permitted Development, the facility will use electricity from the National Grid. Thus, based on electricity from the National Grid for 8,688 hours per year and diesel generators usage for 72 hours per year, the Permitted Development will consume 110.6MW of power, this equates to 970 GWh annually. This translates to approximately 213,840 tonnes of CO₂eq per year (including generator testing) based on the likely 2025 electricity mix and approximately 132,164 tonnes of CO₂eq per year (including generator testing) based on the likely 2030 electricity mix as outlined in Table 9.9.

For the Permitted Development, the electricity provided through the national grid will fully operate under the ETS which will gradually increase the carbon price in future years in order to ensure all EU-wide GHG emission targets are met under the scheme. In relation to the 2030 ETS EU-wide target, the Permitted Development will account for 0.019% of the total in 2030. In relation to the Carbon Budget over the period 2026 - 2030, the average annual total GHG emissions will account for 0.41% of the carbon budget. By 2030, the Permitted Development will account for 4.4% of the 2030 electricity ceiling. The GHG emissions have been compared to the 2030 Sectoral Emission Targets. As the 2035 and 2040 sectoral targets have not been finalized these years have not been assessed.

As set out in Section 9.7.2.3 of the EIAR, the Operator, *"is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target."*

Since the publication of the EIAR, updated information is available from the Operator’s 2023 Sustainability Report. As set out in the report Amazon reached 100% renewable energy in 2023 which includes AWS data centres:

"All of the electricity consumed by Amazon’s operations, including its data centres, was matched with 100% renewable energy in 2023....."

In 2019, we set a goal to match all of the electricity used across our global operations – including our data centres, corporate buildings, grocery stores and fulfilment centres – with 100% renewable energy by 2030. Today, we’re proud to share that we’ve met that goal seven years ahead of schedule. To get there, we’ve become the largest corporate purchaser of renewable energy in the world for four years

running, according to Bloomberg NEF, and have invested billions of dollars in more than 500 solar and wind projects globally, which together are capable of generating enough energy to power the equivalent of 21.9 million EU homes.....

Collectively, these projects represent 28 gigawatts (GW) of renewable energy capacity, making Amazon the world’s largest corporate purchaser of renewable energy for the fourth year in a row. Once operational, these projects are expected to generate more than 77,000 gigawatt-hours (GWh) of renewable energy each year—enough energy to power 7.3 million homes for a year and an increase of 35% from 57,000 GWh in 2022....

In 2023, Amazon announced 39 new renewable energy projects across Europe, adding more than 1 GW of renewable energy capacity to grids in the region. Our total capacity of renewable energy in Europe is now 7 GW, including 1.7 GW of renewable energy from offshore wind.

This achievement is an important step on our journey to achieve net-zero carbon emissions by 2040, and we will continue to focus on reducing emissions through carbon-free energy as part of our commitment to The Climate Pledge.....

Data Centers Powered with Renewable Energy - Amazon’s energy supply from utilities, combined with the renewable energy we procure globally, means that 100% of the electricity consumed by 22 AWS data center regions is matched with renewable energy sources.⁸

Table 9.9 GHG Emissions (CO₂eq) For The Permitted Development (Tonnes CO₂eq)

Year	Back-Up Generator GHG Emissions (tonnes CO ₂ eq)	Electricity GHG Emissions (tonnes CO ₂ eq)	Total (tonnes CO ₂ eq)	% of 2030 Emission Trading System Target	% of 2030 Electricity Sectoral Emission Ceiling
2025	2443	211,396	213,840	0.031%	7.1%
2026	2443	195,061	197,505	0.029%	6.6%
2027	2443	178,726	181,169	0.026%	6.0%
2028	2443	162,391	164,834	0.024%	5.5%
2029	2443	146,056	148,499	0.021%	4.9%
2030	2443	129,721	132,164	0.019%	4.4%

Based on the level of mitigation in place and the commitment to match electricity usage with 100% renewables, the Do Nothing scenario is found to be **direct, long-term, minor adverse** which is overall **not significant**.

9.5.3 GHGA for the Construction Phase

Construction traffic would be expected to be a source of greenhouse gas emissions during this phase of the Proposed Development and Overall Project. Construction vehicles and machinery will give rise to CO₂ and N₂O emissions during construction of the Proposed Development and Overall Project. The Institute of Air Quality Management document ‘Guidance on the Assessment of Dust from Demolition and Construction’ (IAQM, 2024) states that site traffic and plant is unlikely to make a significant impact on climate.

As noted above, construction phase emissions due to traffic and plant are a small fraction of operational emissions and will last for a defined period only. TII guidance *Air Quality Assessment of Specified*

⁸ [Amazon Sustainability | 2023 Report](#)

Infrastructure Projects – PE-ENV-01106 (TII, 2022b), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the climate assessment.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic. The maximum daily traffic total will be 542 vehicles including 157 HGVs with no impact on traffic speeds expected. Thus, the construction phase of the Proposed Development will be below the assessment criteria. The traffic assessment (Chapter 13 of the EIAR) has confirmed that there will be no significant cumulative traffic impacts during the construction phase of the Proposed Development.

It is important to note that the potential impacts associated with the construction phase of the Proposed Development and Overall Project are short-term in nature. When the mitigation measures detailed in the mitigation section (see Section 9.6.1) of this addendum are implemented, direct GHG emissions from the site will not be significant whilst the embodied carbon emissions associated with the construction of the facility will also not be significant. A Carbon Assessment Report entitled "1(e) A4 and A5 Carbon Assessment" has been prepared as part of the further information submission in November 2023 by Henry J Lyons, which assesses the carbon likely to be generated during the construction phase of the Proposed Development and Overall Project. The mitigation measures which will be employed in regard to embodied carbon emission are:

- Materials with a high embodied carbon will be replaced with materials with lower embodied carbon,
- Site material wastage will be reduced by 50% compared to the baseline scenario,
- Onsite electricity and fuel usage will be reduced by 50% during the construction phase.

As a result of these mitigation measures, the GHG emissions will be reduced by over 45% during the construction phase compared to the baseline scenario.

As outlined above, the traffic associated with the construction phase of the Proposed Development will be below the assessment criteria. Thus, due to the duration and nature of the construction activities, CO₂ and N₂O emissions from construction vehicles and machinery will have a **short-term** and **imperceptibly negative** impact on climate and thus have a **not significant** impact.

9.5.4 Impact of Climate Change on the Construction Phase

Appropriate flood risk measures and extreme weather events have been considered as part of the construction planning. As outlined in Chapter 7 of the EIAR there is no current or predicted flood risk (either fluvial, pluvial or coastal) for the site. As outlined in Chapter 7 of the EIAR, the facility will be attenuated with a flow control device, sized to contain a 1-in-100-year storm event and increased by 20% for predicted climate change to limit the surface water discharge from the site during extreme rainfall events.

Thus, the potential for changes to long-term weather impacts as a result of climate change are not considered to be as significant in the context of the construction phase of the project which will take place over a short-term period in the near future. Thus, in line with the methodology outlined in Table 9.5, the likelihood of extreme weather and flooding for the construction phase of the Proposed Development is assessed to be of low likelihood and with a low exposure leading to a finding of low vulnerability and thus a non-significant impact.

Examples of potential climate impacts are included in Annex D (Climate proofing and environmental impact assessment) of the *Technical Guidance on the Climate Proofing of Infrastructure* (European Commission, 2021a). Potential impacts to the Proposed Development and Overall Project as a result climate change include:

- Flood risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow;
- Geotechnical impacts; and
- Major Storm Damage – including wind damage.

Each of these potential risks are considered with respect to the operational phase of the Proposed Development and Overall Project as detailed in Section 9.5. During the construction phase no assessment of the GHG emissions associated with construction traffic is required, as the traffic levels are sub-threshold as outlined in Section 9.5.3; however, consideration has been given to the project's vulnerability to climate impacts. During construction, the Contractor will be required to mitigate against the effects of extreme rainfall / flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind / storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction.

During construction, the Contractor will be required to mitigate against the effects of fog, lightning and hail through site risk assessments and method statements.

9.5.5 GHGA for the Operational Phase

The Proposed Development and Overall Project has the potential, in the absence of mitigation, to release significant quantities of GHG emissions during the operational phase of the project. However, as the capacity of the Proposed Development and Overall Project is greater than 20 MW rated thermal input, a greenhouse gas emission permit will be required for the facility which will be regulated under the EU-wide Emission Trading System (ETS) which necessitates offsetting GHG emissions through the purchase of 'carbon credits'. Thus, the Proposed Development and Overall Project will operate under a system where GHG emissions will become increasingly costly and will encourage GHG emission reductions.

In addition, as outlined in the EU Climate Law (EU, 2021) under the Item (13): "*The EU ETS is a cornerstone of the Union's climate policy and constitutes its key tool for reducing greenhouse gas emissions in a cost-effective way.*"

9.5.6 Impact of Climate Change on the Operational Phase

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. Changes in climate will lead to a variety of associated GHG impacts including:

- Increased average temperatures will lead to a greater requirement for cooling of the data centre buildings leading to greater energy use and associated GHG emissions;
- Increased rainfall will lead to a greater risk of flooding;
- Periods of drought may lead to reduction in water availability.

In order to determine the vulnerability of the Proposed Development and Overall Project to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the Proposed Development and Overall

Project: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog.

The sensitivity of the Proposed Development and Overall Project to the above climate hazards is assessed whilst the exposure of the Proposed Development is also taken into account separately. Table 9.10 details the sensitivity of the Proposed Development and Overall Project on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the Proposed Development and Overall Project to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the Proposed Development and Overall Project to each of the climate hazards as per Table 9.5. The results of the vulnerability assessment are detailed in Table 9.10 below.

Table 9.10 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (coastal, pluvial, fluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Drought	1 (Low)	2 (Medium)	2 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area was determined with reference to a number of online tools, including the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) and with input from the various discipline specialists on the project team as outlined in detail below in Section 9.5.6.1 – Section 9.5.6.5. It was concluded that Proposed Development and Overall Project does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

9.5.6.1 Flooding

There is the potential for flooding related impacts on site in future years due to climate changes as outlined in Section 9.3.2 in the absence of mitigation. Chapter 7 (Hydrology) of the EIAR has investigated the likelihood of flooding and has found that there is no current or predicted flood risk (either fluvial, pluvial or coastal) for the site. As outlined in Chapter 7 of the EIAR, the facility will be attenuated with a flow control device, sized to contain a 1-in-100-year storm event and increased by 20% for predicted climate change to limit the surface water discharge from the site during extreme rainfall events.

9.5.6.2 Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, the appropriate wind loadings are to be calculated in line with the requirements of IS EN 1991-1-4. Lightning protection will be provided for the buildings and designed by a specialist. Hail and fog are not predicted to significantly affect the buildings due to their design.

9.5.6.3 Wildfires

In relation to wildfires, the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR) (2025), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that could support a problematic wildfire in the project area that may cause some risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods.

However, due to the project location the risk of wildfire is significantly lessened and it can be concluded that the Proposed Development and Overall Project is of low vulnerability to wildfires.

9.5.6.4 Landslides

Landslide susceptibility mapping developed by GSI indicates that the Proposed Development and Overall Project location is not within an area that is susceptible to landslides and there are no recorded historical landslide events at the project location. It can be concluded that landslides are not a risk to the Proposed Development and Overall Project site.

9.5.6.5 Extreme Temperatures (Heat & Cold)

At the detailed design stage chosen building materials will be high quality, durable and hard-wearing and chosen to withstand increased variations in temperature in the future as a result of climate change. Snow loads are to be calculated in line with the requirements of IS EN 1991-1-3 and new Met Eireann reports and mapping published in 2022.

9.5.6.6 Summary

Overall, the Proposed Development and Overall Project has at most low vulnerabilities, as outlined in Table 9.10 and as outlined in detail below in Section 9.5.6.1 – Section 9.5.6.5, to the identified climate hazards and therefore no detailed risk assessment is required.

Thus, in line with the methodology outlined in Table 9.5, the likelihood of extreme weather and flooding was assessed to be of low likelihood and with a low or medium exposure leading to a finding of low vulnerability and thus a non-significant impact.

Under the 2021 Climate Act, the National Adaptation Framework, which aims to reduce the vulnerability of the country to the negative effects of climate change and to avail of positive impacts, remains in place as does the Carbon Action Plan, which will reduce GHG emissions in future years, with a number of other strategies currently being proposed.

The Electricity & Gas Networks Sector Climate Change Adaptation Plan prepared under the National Adaptation Framework has been prepared by the Department of Communications, Climate Action and Environment (DCCAE, 2019) and considers future climate change impacts on energy infrastructure and aims to reduce vulnerability by building resilience in the energy sector. The plan proposes to avoid or minimise future adverse impacts within the sector and to exploit opportunities. Steps include diversification of energy sources, improved communication between relevant bodies/stakeholders, a requirement for energy network companies to continue to ensure climate change is taken into account in planning and design standards and engineering management practices and identification of vulnerable areas and measures to take with respect to climate impacts.

9.6 Mitigation Measures

9.6.1 Construction Phase

The objective of the mitigation measures outlined below is to ensure that GHG emissions are minimized wherever possible during the construction phase of the Proposed Development and the Overall Project. The mitigation measures which are relevant to GHG emission reductions are outlined below:

- All vehicles will be required to switch off engines when stationary (no idling).
- All vehicles will be serviced and maintained to ensure emissions are minimised.
- Where practicable, building materials will be reused within the extent of the Proposed Development and Overall Project; and
- Where practicable, building materials will be sourced locally (within 20-25km) to reduce the

embodied emissions associated with transport.

- Building B and C on the subject site (Planning Register Reference FW19A/0087) were selected as a pilot project to reduce the embodied carbon of concrete utilised in the construction phase. The pilot achieved a 17% reduction in embodied carbon of concrete through the use of GGBS (Ground Granulated Blast-furnace Slag). The Proposed Development and Overall Project will increase the embodied carbon reduction of concrete to 45% through increased level of GGBS in the concrete mix design. The Proposed Development and Overall Project will also utilise green steel, sourced from steel mills using electric arc furnace production processes. Unlike conventional steel produced from primary materials, coal, and gas, its suppliers are using up to 100% recycled content and are powered by electricity only, reducing embodied carbon up to 70%.
- Site material wastage will be reduced by 50% compared to the baseline scenario.
- Onsite electricity and fuel usage will be reduced by 50% during the construction phase.

As a result of these mitigation measures, the GHG emissions will be reduced by over 45% during the construction phase compared to the baseline scenario.

9.6.2 Operational Phase

The objective of the mitigation measures outlined below is to ensure that GHG emissions are minimized wherever possible during the operational phase of the Proposed Development and the Overall Project. The key mitigation measures which are relevant to GHG emission reductions are outlined below:

As set out in Section 9.7.2.3 of the EIAR, the Operator, "is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target."

Since the publication of the EIAR, updated information is available from the Operator's 2023 Sustainability Report⁹. As outlined below Amazon reached 100% renewable energy in 2023 which includes AWS data centres:

"All of the electricity consumed by Amazon's operations, including its data centres, was matched with 100% renewable energy in 2023....."

In 2019, we set a goal to match all of the electricity used across our global operations – including our data centres, corporate buildings, grocery stores and fulfilment centres – with 100% renewable energy by 2030. Today, we're proud to share that we've met that goal seven years ahead of schedule. To get there, we've become the largest corporate purchaser of renewable energy in the world for four years running, according to Bloomberg NEF, and have invested billions of dollars in more than 500 solar and wind projects globally, which together are capable of generating enough energy to power the equivalent of 21.9 million EU homes....."

Collectively, these projects represent 28 gigawatts (GW) of renewable energy capacity, making Amazon the world's largest corporate purchaser of renewable energy for the fourth year in a row. Once operational, these projects are expected to generate more than 77,000 gigawatt-hours (GWh) of renewable energy each year—enough energy to power 7.3 million homes for a year and an increase of 35% from 57,000 GWh in 2022...."

⁹ [Amazon Sustainability | 2023 Report](#)

In 2023, Amazon announced 39 new renewable energy projects across Europe, adding more than 1 GW of renewable energy capacity to grids in the region. Our total capacity of renewable energy in Europe is now 7 GW, including 1.7 GW of renewable energy from offshore wind.

This achievement is an important step on our journey to achieve net-zero carbon emissions by 2040, and we will continue to focus on reducing emissions through carbon-free energy as part of our commitment to The Climate Pledge.....

Data Centers Powered with Renewable Energy - Amazon's energy supply from utilities, combined with the renewable energy we procure globally, means that 100% of the electricity consumed by 22 AWS data center regions is matched with renewable energy sources."

With respect to the Proposed Development and Overall Project, the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy requires Applicants to demonstrate "*renewable energy delivery in Ireland*". The Operator is committed to meeting this new requirement. In Q1 2023, the Operator issued a Request for Proposal to the market, requesting renewable energy developers to present their proposed development pipeline and terms to align with Operator's future requirements – this process saw submissions from several projects, totalling approximately 1GW of power. The Operator is currently progressing opportunities with the details commercially confidential at this time.

As set out in the response to additional information Item 3(b), the Operator would welcome a planning condition similar to the wording of Condition 13 applied by the Planning Authority 13 is as follows:

"Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority details of a Corporate Purchase Power Agreement that the developer has entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. The Agreement shall comply with the following:

- a) The new renewable energy projects shall not be supported by government, consumer or other public subsidies;*
- b) The new renewable energy projects shall be located in Ireland and full details of these including consent details shall be provided;*
- c) The new renewable energy projects shall be provided by the applicant's group, that is Amazon.com, Inc.*
- d) The new renewable energy generation shall relate to energy that is not being generated at the date of grant of this permission.*
- e) The amount of electricity generated by the new renewable energy projects shall be equal to or greater than the electricity requirements of the data centres in operation at any given time.*
- f) The new renewable energy projects shall be fully operational prior to the commencement of operation of the data centres having regard to the phased nature of the proposed development."*

The generators will be regularly serviced to ensure that they operate to their maximum efficiency. In addition, as outlined in Section 9.2.3 of the EIAR, the Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO). Subject to availability, it is expected that fuel for the Proposed Development and Overall Project will be renewable diesel.

As set out in Section 7.38 of the submitted Planning Statement, the Operator was one of the original signatories of the EU Climate Neutral Data Centre Pact (CNDCP). As a signatory to the CNDCP, the Proposed Development and Overall Project will: 1) Assess 100% of used server equipment for recycling, repair and reuse; 2) explore possibilities for waste heat reuse for new data centres; 3) meet an annual PUE (Power Usage Effectiveness) target of 1.3 in cool climates by January 2025 and existing data centres by January 2030; 4) Match data centre electricity demand by 100% by December 31, 2030, and; 5) new

data centres that use potable water will be designed to meet a maximum WUE (Water Usage Effectiveness) of 0.4 L/kWh in areas with water stress by 01-Jan-2025.

The Proposed Development and Overall Project are designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design PUE of 1.12 as compared to the 1.30 set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development has a design WUE of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.

PUE is the most commonly used metric to determine the energy efficiency of a data centre. Data centres need a range of auxiliary services, including cooling, to support the main 'work' of the IT systems, PUE measures the size of this 'overhead' energy used as a ratio to the energy used to power the computing equipment. Since PUE is a ratio, the closer the number is to 1.0, the more energy efficient the data centre. A survey of European data centres by 451 Research found "European enterprises cited on average a PUE of 2.1¹⁰ as compared to a PUE of 1.3 set by the Climate Neutral Data Centre Pact and an annualised design PUE of 1.12 for the Proposed Development.

Similar to PUE, WUE is the most commonly used water efficiency metric. This metric is also expressed as a ratio and measures the amount of energy used to power the computing equipment and the water used in the data centre. In 2022, the Operator announced it will be water positive (water+) by 2030, returning more water to communities than it uses in its direct operations. The Operator has been driving four key strategies in pursuit of becoming water+ by 2030: improving water efficiency, using sustainable water sources, returning water for community reuse, and supporting water replenishment projects.

To reduce both the energy and water use in their Irish data centres, the Operator utilises direct evaporative cooling systems, which predominately utilizes outside air to cool the servers. This means that for more than 95% of the year the Operator use no water to cool their data centres in Ireland resulting in a design WUE for the Proposed Development of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development includes rainwater harvesting and 2170m³ of on-site water storage which will be used to ensure non-potable process water for cooling needs for the Proposed Development are met with no reliance on the public water mains.

In addition and as set out in Section 7.30-7.32 of the submitted Planning Report and Section 9.7.2.3 of the EIAR, the Operator has ensured that the design of the Proposed Development and Overall Project is future proofed to include heat distribution pipework to the site boundary and the spatial requirements to allow heat recovery equipment be installed at a later date – thus allowing the Operator to provide recycled heat free of charge should a District Heating Network be implemented in the area. In this regard and subject to a grant of permission, the Operator will maintain their ongoing dialogue with Codema who are assessing potential opportunities in the immediate area. Additional mitigation measures include the provision of PV roof panels along with other energy efficiency measures outlined in the submitted Energy Report (entitled *Data Centre Development, Cruiserath, Dublin 15 Energy Statement*).

9.7 Residual Effects of the Proposed Development

9.7.1 Construction Phase: Proposed Development

9.7.1.1 Impact of Construction Phase: Proposed Development

The Institute of Air Quality Management document 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2024) states that site traffic and plant is unlikely to make a significant impact on climate. As outlined in Section 9.5.3, the quantity of road traffic during the construction phase of the Proposed Development is below the assessment threshold. Based on the scale and temporary nature of

¹⁰ 451 Research - Improving datacenter efficiency in Europe – the role of PUE

the construction works and the intermittent use of equipment, the potential impact on climate change from the direct impact of the Proposed Development is deemed to be *short-term, minor adverse* and *not significant* in relation to Ireland's obligations under the EU 2030 target.

As outlined in detail in Section 9.5.3, a detailed climate assessment of the construction stage traffic has been scoped out given the low level of construction traffic. It has also been confirmed that there is no significant traffic cumulative impact (Chapter 13 of the EIAR) and it can therefore be determined that the construction stage traffic will have a residual ***direct, short-term, negative*** and ***not significant*** effect on climate.

9.7.1.2 Impact of Construction Phase: Overall Project

The Institute of Air Quality Management document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024) states that site traffic and plant is unlikely to make a significant impact on climate. As outlined in detail in Section 9.5.3, the quantity of road traffic during the construction phase of the Overall Project is below the assessment threshold. Based on the scale and temporary nature of the construction works and the intermittent use of equipment, the potential impact on climate change from the direct impact of the Overall Project is deemed to be *short-term, minor adverse* and *not significant* in relation to Ireland's obligations under the EU 2030 target.

The effect of the Overall Project in terms of climate will be ***direct, short-term, negative*** and ***not significant***.

9.7.2 Impact of Climate Change on the Operational Phase

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future years. A flood risk assessment has been undertaken as part of the permitted development on the site and adequate attenuation and drainage have been provided for to account for increased rainfall in future years. Therefore, the impact will be *imperceptible*, which is not significant.

9.7.3 Impact of the Operational Phase on Climate Change: Proposed Development

Under the Proposed Development Scenario, the main GHG emissions will be indirect emissions associated with the use of electricity for the operation of the data centre and infrequent operation of the backup generators. The indirect (due to electricity) and direct (due to diesel usage) CO₂ emissions to operate the Proposed Development has been assessed below in the context of Ireland's national annual CO₂ emissions. The expected emission rates for each year from 2025 to 2030 is shown below in Table 9.8.

For the Proposed Development, the facility will use electricity from the National Grid. Thus, based on electricity from the National Grid for 8,688 hours per year and generators usage for 72 hours per year, the Proposed Development will consume 73.1MW of power this equates to 640.4 GWh annually. This translates to approximately 141,335 tonnes of CO₂eq per year (including generator testing) based on the likely 2025 electricity mix and approximately 87,352 tonnes of CO₂eq per year (including generator testing) based on the likely 2030 electricity mix as outlined in Table 9.11.

For the Proposed Development, the electricity provided through the national grid will fully operate under the ETS which will gradually increase the carbon price in future years in order to ensure all EU-wide GHG emission targets are met under the scheme. In relation to the 2030 ETS EU-wide target, the Proposed Development will account for 0.013% of the total GHG emissions in 2030. In relation to the Carbon Budget over the period 2026-2030, the average annual total will account for 0.26% of the carbon budget. By 2030, the Proposed Development will account for 2.9% of the 2030 electricity ceiling.

As set out in Section 9.7.2.3 of the EIAR, the Operator, *"is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target."*

Since the publication of the EIAR, updated information is available from the Operator's 2023 Sustainability Report. As set out in the report Amazon reached 100% renewable energy in 2023 which includes AWS data centres:

"All of the electricity consumed by Amazon's operations, including its data centres, was matched with 100% renewable energy in 2023....."

In 2019, we set a goal to match all of the electricity used across our global operations – including our data centres, corporate buildings, grocery stores and fulfilment centres – with 100% renewable energy by 2030. Today, we're proud to share that we've met that goal seven years ahead of schedule. To get there, we've become the largest corporate purchaser of renewable energy in the world for four years running, according to Bloomberg NEF, and have invested billions of dollars in more than 500 solar and wind projects globally, which together are capable of generating enough energy to power the equivalent of 21.9 million EU homes....."

Collectively, these projects represent 28 gigawatts (GW) of renewable energy capacity, making Amazon the world's largest corporate purchaser of renewable energy for the fourth year in a row. Once operational, these projects are expected to generate more than 77,000 gigawatt-hours (GWh) of renewable energy each year—enough energy to power 7.3 million homes for a year and an increase of 35% from 57,000 GWh in 2022...."

In 2023, Amazon announced 39 new renewable energy projects across Europe, adding more than 1 GW of renewable energy capacity to grids in the region. Our total capacity of renewable energy in Europe is now 7 GW, including 1.7 GW of renewable energy from offshore wind.

This achievement is an important step on our journey to achieve net-zero carbon emissions by 2040, and we will continue to focus on reducing emissions through carbon-free energy as part of our commitment to The Climate Pledge....."

Data Centers Powered with Renewable Energy - Amazon's energy supply from utilities, combined with the renewable energy we procure globally, means that 100% of the electricity consumed by 22 AWS data center regions is matched with renewable energy sources".¹¹

With respect to the Proposed Development, the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy requires Applicants to demonstrate *"renewable energy delivery in Ireland"*. The Operator is committed to meeting this new requirement. In Q1 2023, the Operator issued a Request for Proposal to the market, requesting renewable energy developers to present their Proposed Development pipeline and terms to align with Operator's future requirements – this process saw submissions from several projects, totalling approximately 1GW of power. The Operator is currently progressing opportunities with the details commercially confidential at this time.

As set out in the response to additional information Item 3(b), the Operator would welcome a planning condition similar to the wording of Condition 13 applied by the Planning Authority 13 is as follows:

"Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority details of a Corporate Purchase Power Agreement that the developer has entered into"

¹¹ [Amazon Sustainability | 2023 Report](#)

which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. The Agreement shall comply with the following:

- a) The new renewable energy projects shall not be supported by government, consumer or other public subsidies;
- b) The new renewable energy projects shall be located in Ireland and full details of these including consent details shall be provided;
- c) The new renewable energy projects shall be provided by the applicant's group, that is Amazon.com, Inc.
- d) The new renewable energy generation shall relate to energy that is not being generated at the date of grant of this permission.
- e) The amount of electricity generated by the new renewable energy projects shall be equal to or greater than the electricity requirements of the data centres in operation at any given time.
- f) The new renewable energy projects shall be fully operational prior to the commencement of operation of the data centres having regard to the phased nature of the proposed development."

Table 9.11 GHG Emissions (CO₂eq) For The Proposed Development (Tonnes CO₂eq)

Year	Back-Up Generator GHG Emissions (tonnes CO ₂ eq)	Electricity GHG Emissions (tonnes CO ₂ eq)	Total (tonnes CO ₂ eq)	% of 2030 Emission Trading System Target	% of 2030 Electricity Sectoral Emission Ceiling
2025	1615	139,720	141,335	0.020%	4.7%
2026	1615	128,924	130,539	0.019%	4.4%
2027	1615	118,127	119,742	0.017%	4.0%
2028	1615	107,331	108,946	0.016%	3.6%
2029	1615	96,534	98,149	0.014%	3.3%
2030	1615	85,738	87,352	0.013%	2.9%

9.7.4 Impact of the Operational Phase on Climate Change: Overall Project

Under the Overall Project Scenario, the main GHG emissions will be indirect emissions associated with the use of electricity for the operation of the data centre and infrequent operation of the backup generators. The indirect (due to electricity) and direct (due to diesel usage) CO₂ emissions to operate the Overall Project has been assessed below in the context of Ireland's national annual CO₂ emissions. The expected emission rates for each year from 2025 to 2030 is shown below in Table 9.8.

For the Overall Project, the facility will use electricity from the National Grid. Thus, based on electricity from the National Grid for 8,688 hours per year and generators usage for 72 hours per year, the Overall Project will consume 219.7MW of power this equates to 1927 GWh annually. This translates to approximately 424,779 tonnes of CO₂eq peryear (including generator testing) based on the likely 2025 electricity mix and approximately 262,535 tonnes of CO₂eq per year (including generator testing) based on the likely 2030 electricity mix as outlined in Table 9.12

For the Overall Project, the electricity provided through the national grid will fully operate under the ETS which will gradually increase the carbon price in future years in order to ensure all EU-wide GHG emission targets are met under the scheme. In relation to the 2030 ETS EU-wide target, the Overall Project will account for 0.038% of the total GHG emissions in 2030. In relation to the Carbon Budget over the period 2026-2030, the average annual total will account for 0.78% of the carbon budget. By 2030, the Overall Project will account for 8.8% of the 2030 electricity ceiling.

Table 9.12 GHG Emissions (CO₂eq) For The Overall Project (Tonnes CO₂eq)

Year	Back-Up Generator GHG Emissions (tonnes CO₂eq)	Electricity GHG Emissions (tonnes CO₂eq)	Total (tonnes CO₂eq)	% of 2030 Emission Trading System Target	% of 2030 Electricity Sectoral Emission Ceiling
2025	4854	419,926	424,779	0.061%	14.2%
2026	4854	387,477	392,331	0.057%	13.1%
2027	4854	355,028	359,882	0.052%	12.0%
2028	4854	322,579	327,433	0.047%	10.9%
2029	4854	290,131	294,984	0.043%	9.8%
2030	4854	257,682	262,535	0.038%	8.8%

9.7.5 Determination Of The Significance of the Operational Phase on Climate: Proposed Development and Overall Project

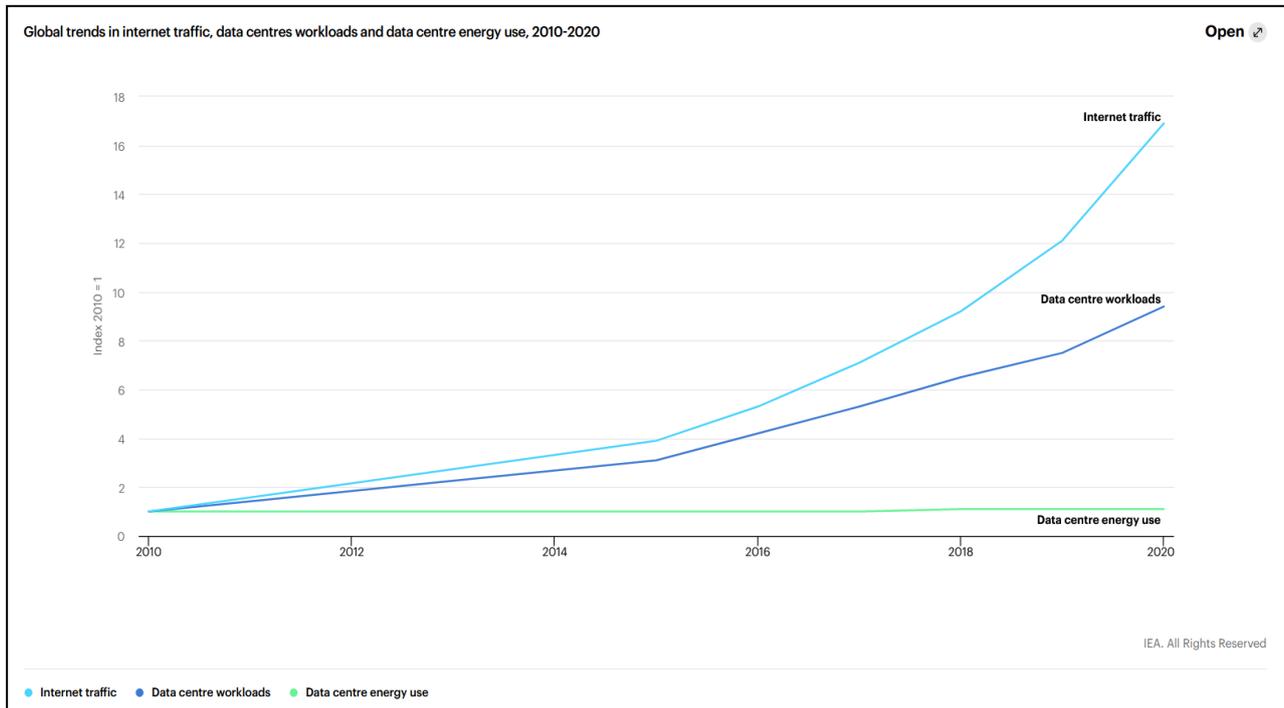
The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors as set out in Section 9.2.4. In relation to climate, as there are no project specific assessment criteria, the Proposed Development and Overall Project has been assessed against the recommended IEMA (IEMA, 2022) significance determination (see Section 9.2.4).

In reference to Principle 1 of IEMA Guidance (IEMA, 2022), the Proposed Development and Overall Project will replace activities which have a higher GHG profile. Data centres represent a significantly more efficient means of data storage when compared to a distributed model of enterprise data storage by individuals and companies (or 'enterprise sites'). Data centres are more energy efficient than enterprise sites due to comprehensive efficiency central to the design of the Proposed Development and Overall Project. In a June 2020 report, the International Energy Agency noted: *"Hyperscale data centres are very efficient large-scale cloud data centres that run at high capacity, owing in part to virtualisation software that enables data centre operators to deliver greater work output with fewer servers. The shift away from small, inefficient data centres towards much larger cloud and hyperscale data centres is evident in the shrinking share of data centre infrastructure in total energy demand..."*¹². A study published in 2020 by Science¹³ Magazine, found that while cloud computing productivity has grown globally by 550% between 2010 and 2018, energy consumption rose in tandem during the same period by just 6%, demonstrating the energy efficiency improvements of the industry, most notably by hyperscale data centres, as per the current project. A report from the international Energy Agency (IEA) entitled "Data Centres & Data Transmission Networks (IEA, 2021) found that while global internet traffic surged by more than 40% in 2020, this strong growth in demand for data centre services continues to be mostly offset by ongoing efficiency improvements for data centre infrastructure as shown in Figure 9.9.

¹² IEA Data Centres and Data Transmission Networks – June 2020

¹³ Masanet, Eric; Shehabi; Arman, Lei; Nuo, Smith, Sarah; Koomey, Jonathan; "Recalibrating global data center energy-use estimates", Sciencemag.org, February 28, 2020, Vol. 367, Issue 6481; ("Expressed as energy use per compute instance, the energy intensity of global datacenters has decreased by 20% annually since 2010...").

Figure 9.9 Global Trends In Internet Traffic, Data Centres Workloads & Data Centre Energy Use 2010 – 2020



In the wider context, data centres are approximately 80% more efficient than on-premises servers and the associated GHG savings have not been accounted for in the current analysis¹⁴. In addition, the carbon intensity of electricity is predicted to decrease from 254 gCO₂/kWh in 2023 to 135 gCO₂/kWh in 2030 as a result of the increase in renewables to 68.3% of the electricity market by 2030, based on EPA data (EPA, 2025). Overall, all data centres in Ireland are estimated to account for 1.85% of Ireland’s total carbon emissions in 2020 and it is predicted that data centres in Ireland will peak at 2.2% of total GHG emissions in 2025 and will fall or level off after this date (Host in Ireland, 2020).

In reference to Principle 2 of IEMA Guidance (IEMA, 2022), a range of measures will be employed which will reduce GHG emissions and are in line with “best practice” as outlined in the IEMA guidance (IEMA, 2022). The site specific mitigation which will be employed include:

- The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO) to their Irish Data Centers. Subject to availability, it is expected that fuel for the Proposed Development and Overall Project will be renewable diesel.
- A PV array is proposed on each building E and F will consist of 285 PV modules, each of 300Wp, yielding a total peak power generated of 85.5kWp to offset the lighting and IT electrical power requirements during the peak summer months for the administration & office of each building.
- A rainwater harvesting system will be used to ensure non-potable process water for cooling needs for the operational development are met with no reliance on the public water mains. The proposed buildings are designed to harvest rainwater for up to 100% of the annual process water requirements and includes 2170m³ of onsite water storage designed to maximise the storage and utilisation of rainwater, significantly reducing the annual water demand from the local supply.
- Facilitating district heating to a local user for heat or a future heat network.
- The Proposed Development and Overall Project is designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design PUE of 1.12 as compared to the 1.30 set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development

¹⁴ <https://assets.aboutamazon.com/b0/3e/b0fc6b8a4a85b38ac65a3fbc584c/11061-aws-451research-advisory-bw-cloudefficiency-eu-2021-r5-final-corrected-data.pdf>

has a design WUE of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.

- Internal lighting shall be provided by highly efficient, low energy LED luminaires combined with presence detection controls or local switching where appropriate. The lighting design meets the illumination level requirements of CIBSE Code of Lighting. LED luminaires are also to be used for the emergency lighting installation, which is designed to comply with the requirements of EN 12464 part 1 and IS 3217:2013+A1:2017.
- The external lighting will make use of high efficiency, low energy LED luminaires. The lighting design has been optimized to reduce glare, spillage or other light nuisance to adjacent sites and/or public road.
- The data storage rooms are supplied with fresh air which is sufficient to cool the space for the majority of the annual running hours. For a small number of hours during the peak cooling season, adiabatic cooling is required. The system utilises fans to supply air directly from outside to the data storage rooms. The air is warmed as it passes across the IT servers located in the data storage rooms, and subject to external ambient conditions, the air is either recirculated or returned to atmosphere.
- The mechanical system has various modes of operation to provide efficient and reliable cooling to the data processing area. The mechanical system is monitored and controlled by an electronic building management system (BMS). The system monitors conditions and responds to reduce fan speeds and pump speed to maintain the operating point at the minimum necessary to meet the data storage room environmental conditions.
- All air supply and extract systems serving the data storage rooms are provided with high efficiency direct drive fans. The EC direct drive fan is the most efficient fan solution available to facilitate demand control.

In reference to Principle 3, it is the intention of the applicant that measures be implemented in line with "best practice" as outlined in the IEMA guidance (IEMA, 2022). The phasing of the Proposed Development and the period taken to reach full capacity within each planned phase will result in the 'ramping up' of demand associated with the project over a number of years during the lifetime of the permission and thus the GHG emissions in the early years of the project will be an overestimation of reality. As outlined in Table 9.11, should the facility open in Year 2027 rather than Year 2025, this will lead to a reduction in GHG emissions in the first year of operation of approximately 21,600 tonnes of CO₂eq. In addition, should the Proposed Development operate at 50% of the maximum load in the first year of operation (assumed to be Year 2025), this will lead to a reduction of approximately 70,700 tonnes of CO₂eq in Year 2025.

As the Proposed Development and Overall Project are greater than 20 MW rated thermal input, a greenhouse gas emission permit will be required for the facility which will be regulated under the EU-wide Emission Trading System (ETS). Electricity providers form part of the ETS and thus greenhouse gas emissions from these electricity generators are not included when determining compliance with the targeted 42% reduction in the non-ETS sector i.e. electricity associated greenhouse gas emissions will not count towards the Effort Sharing Regulation (because the Effort Sharing Regulation relates to non-ETS emissions and any fossil-fuel related GHG emissions related, directly or indirectly, to energy generation for the Proposed Development and Overall Project will be continue to be controlled, increasingly stringently, by the ETS which is the subject of Directive 2003/87/EC as amended). On an EU-wide basis, where the ETS market in 2023 was approximately 1,071 million tonnes CO₂eq, the impact of the emissions associated with the Overall Project will be no more than 0.038% of the total EU-wide ETS market which is imperceptible.

The Overall Project will account for a peak demand of approximately 1,927 GWh when fully completed. However as outlined below, the overall project will operate in accordance with the policies and objectives of the 2021 Climate Act. The phasing of the development and the period taken to reach full capacity within each planned phase will result in the 'ramping up' of demand associated with the project over a number of years during the lifetime of the 10-year permission. In collaboration with Eirgrid, the Transmission

System Operator, the Operator has a revised connection agreement to provide for eight incremental ramps (increases) in power supply to the site, commencing in 2022 and completing in 2029 with an incremental ramp occurring on 1 January of each year.

Table 9.13 shows the significance of the Proposed Development and Overall Project when compared to the Electricity 2030 Sectoral Emission Ceiling based on the approach set out in IEMA guidance (IEMA, 2022). The assessment is presented both prior to and post mitigation. As shown in Table 9.13, the impact of the Proposed Development and Overall Project prior to mitigation would be deemed to be a moderate, adverse impact. Although the Proposed Development and Overall Project prior to mitigation is better than the enterprise computers, the impact would still be significant in the absence of appropriate mitigation.

Also presented in Table 9.13 is the Proposed Development and Overall Project impact post mitigation. As outlined above and in the *Data Centre Development, Cruiserath, Dublin 15 Energy Statement* the Proposed Development and Overall Project will use "best practice" adaptive design measures and long-term corporate power purchase agreements. Specific measures include;

- The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO) to their Irish Data Centers. Subject to availability, it is expected that fuel for the Proposed Development and Overall Project will be renewable diesel.
- A PV array is proposed on each building E and F will consist of 285 PV modules, each of 300Wp, yielding a total peak power generated of 85.5kWp to offset the lighting and IT electrical power requirements during the peak summer months for the administration & office of each building.
- A rainwater harvesting system will be used to ensure non-potable process water for cooling needs for the operational development are met with no reliance on the public water mains. The proposed buildings are designed to harvest rainwater for up to 100% of the annual process water requirements and includes 2170m³ of onsite water storage designed to maximise the storage and utilisation of rainwater, significantly reducing the annual water demand from the local supply.
- Facilitating district heating to a local user for heat or a future heat network.
- The Proposed Development and Overall Project is designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design PUE of 1.12 as compared to the 1.30 set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development has a design WUE of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.
- Internal lighting shall be provided by highly efficient, low energy LED luminaires combined with presence detection controls or local switching where appropriate. The lighting design meets the illumination level requirements of CIBSE Code of Lighting. LED luminaires are also to be used for the emergency lighting installation, which is designed to comply with the requirements of EN 12464 part 1 and IS 3217:2013+A1:2017.
- The external lighting will make use of high efficiency, low energy LED luminaires. The lighting design has been optimized to reduce glare, spillage or other light nuisance to adjacent sites and/or public road.
- The data storage rooms are supplied with fresh air which is sufficient to cool the space for the majority of the annual running hours. For a small number of hours during the peak cooling season, adiabatic cooling is required. The system utilises fans to supply air directly from outside to the data storage rooms. The air is warmed as it passes across the IT servers located in the data storage rooms, and subject to external ambient conditions, the air is either recirculated or returned to atmosphere.
- The mechanical system has various modes of operation to provide efficient and reliable cooling to the data processing area. The mechanical system is monitored and controlled by an electronic building management system (BMS). The system monitors conditions and responds to reduce fan speeds and pump speed to maintain the operating point at the minimum necessary to meet the data storage room environmental conditions.

- All air supply and extract systems serving the data storage rooms are provided with high efficiency direct drive fans. The EC direct drive fan is the most efficient fan solution available to facilitate demand control.

Amazon is committed to meeting this new requirement to demonstrate “renewable energy delivery in Ireland” and would welcome a planning condition similar to the wording of Condition 13 applied by the Planning Authority. A Corporate Purchase Power Agreement will be entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy.

With the implementation of these measures, including the CPPA, the Proposed Development will have net zero GHG emissions and thus will be in line with the trajectory to net zero GHG emissions in Ireland by 2050. As outlined in Section 9-16The CPPA is fully aligned with IEMA guidance as outlined in IEMA (2022) which states in regard to significance that:

“A project’s impact can shift from significant adverse to non-significant effects by incorporating mitigation measures that substantially improve on business-as-usual and meet or exceed the science based emissions trajectory of ongoing but declining emissions towards net zero.”(IEMA, 2022)

In addition, IEMA (2022) states that;

“Where embedded/committed mitigation is relied upon in the assessment of effects, the practitioner must form a clear judgement that this mitigation is:

1. *Evidenced in the design for the project,*
2. *A committed goal that is secured, e.g. forming part of the description of development, a specific planning condition/requirement, or a legal agreement,*
3. *Realistic and achievable to deliver.”(IEMA, 2022)*

The mitigation measures outlined in Section 9.6 to ensure that any residual GHG emissions are mitigated in line with the IEMA guidance. The Institute of Environmental Management and Assessment (IEMA) guidance note on “Assessing Greenhouse Gas Emissions and Evaluating their Significance – 2nd Edition” (IEMA, 2022) states that:

“the crux of significance regarding impact on climate is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”.

Thus, in line with the IEMA methodology (IEMA, 2022), the impact of the Proposed Development is reduced to a **minor adverse, non-significant** impact.

Table 9.13 GHG Emissions Associated With The Proposed Development And Overall Project Compared To Sectoral Emission Ceiling & ETS

Scenario	% Of 2030 ETS Total ^{Note 1}	% Of Electricity Emission 2030 Ceiling ^{Note 2}	Significance (Prior to mitigation)	Significance (After mitigation)
Proposed Development	0.013%	2.9%	Moderate Adverse	Minor Adverse
Overall Project	0.038%	8.8%	Moderate Adverse	Minor Adverse

Note 1 ETS 2030 Total = 690.91 Million Tonnes CO₂eq

Note 2 Based on 2030

Similarly, Table 9.13 shows the significance of the Overall Project when compared to the Electricity 2030 Sectoral Emission Ceiling based on the approach set out in IEMA guidance (IEMA, 2022). The assessment is presented both prior to and post mitigation. As shown in Table 9.13, the impact of the Overall Project prior to mitigation would be deemed to be a moderate, adverse impact. Although the Overall Project prior to mitigation is better than the “do-nothing” scenario of enterprise computers, the impact would still be significant in the absence of appropriate mitigation.

Also presented in Table 9.13 is the Overall Project impact post mitigation. As outlined above the project will use “best practice” adaptive design measures:

- The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO) to their Irish Data Centers. Subject to availability, it is expected that fuel for the Proposed Development and Overall Project will be renewable diesel.
- A PV array is proposed on each building E and F will consist of 285 PV modules, each of 300Wp, yielding a total peak power generated of 85.5kWp.
- A rainwater harvesting system will be used to ensure non-potable process water for cooling needs for the operational development are met with no reliance on the public water mains.
- Facilitating district heating to a local user for heat or a future heat network.
- The Proposed Development and Overall Project is designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design PUE of 1.12 as compared to the 1.30 set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development has a design WUE of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.
- Internal lighting shall be provided by highly efficient, low energy LED luminaires combined with presence detection controls or local switching where appropriate. The lighting design meets the illumination level requirements of CIBSE Code of Lighting. LED luminaires are also to be used for the emergency lighting installation, which is designed to comply with the requirements of EN 12464 part 1 and IS 3217:2013+A1:2017.

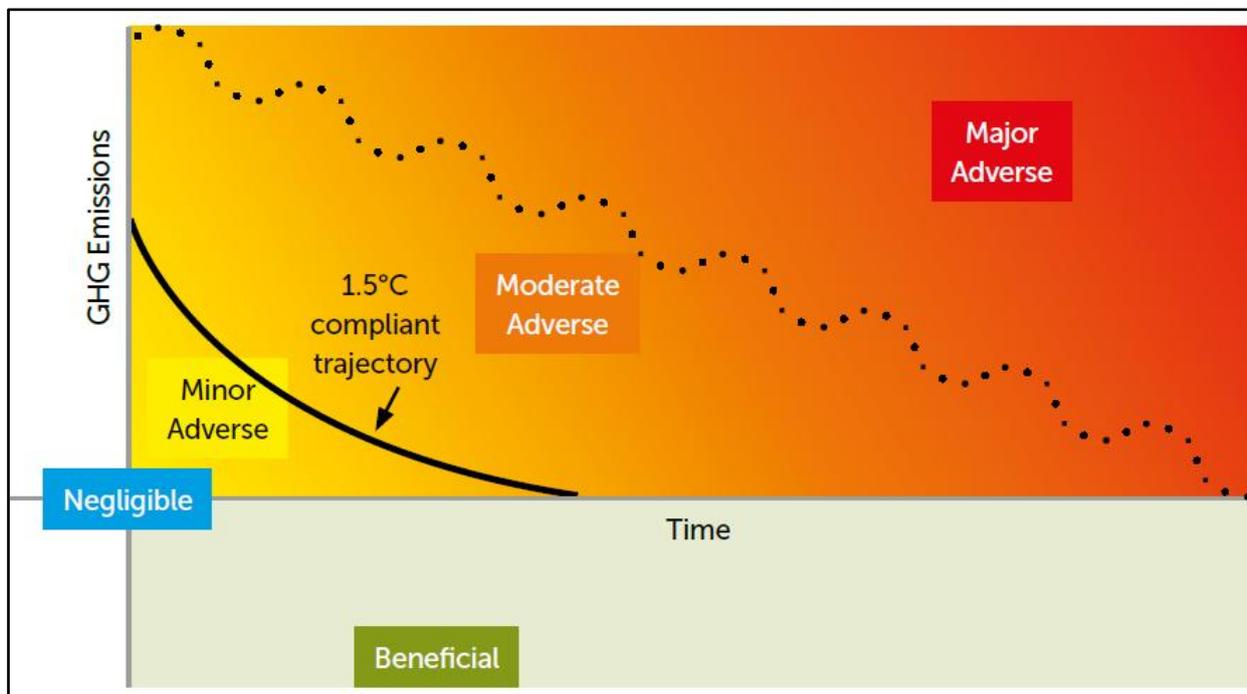
In addition, Amazon is committed to offsetting GHG emissions in line with “best practice” as outlined in IEMA (IEMA, 2022) as outlined below:

- A Corporate Purchase Power Agreement will be entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy.
- Amazon is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target.
- Amazon reached 100% renewable energy in 2023. This includes AWS data centres. As of January 2023, Amazon has announced over 400 renewable energy projects representing 20 gigawatts (GW) of clean energy capacity.”
- In 2022, the electricity consumed in 19 AWS cloud computing regions, including their cloud region in Ireland, was attributable to 100% renewable energy.

Amazon is committed to meeting this requirement to demonstrate “renewable energy delivery in Ireland” and fully offsetting GHG emissions.

With a reduction in residual emissions through best practice and the implementation of a series of adaptive design measures, the net impact of the Proposed Development and Overall Project is not significant. The impact of these measures will be to ensure that the Proposed Development and Overall Project will have in effect net zero GHG emissions when the adaptive onsite measures and the commitments outlined herein are implemented. It is envisaged that the use of electricity to power the facility will achieve net zero by 2050 and the commitment to offset all interim fossil fuel derived GHG emissions associated with the Proposed Development and Overall Project by the purchase of Corporate Power Purchase Agreements (CPPAs) the predicted impact to climate is deemed to be **indirect, long-term, negative and minor adverse**. Should net zero not be achieved in 2050 then the necessity for CPPAs for the Proposed Development and Overall Project will continue until such time that net zero GHG emissions is achieved. Thus, the impact of the Proposed Development and Overall Project, in line with the IEMA methodology (IEMA, 2022), as shown in Figure 9.10 is reduced to a **minor adverse, non-significant** impact.

Figure 9.10 Diagram of Significance Criteria – GHGs Emissions vs Time To 2050 (IEMA, 2022)



Once the mitigation measures outlined in Section 9.6 are implemented, the residual impacts on climate from the construction of the Proposed Development and Overall Project will be **short-term** and **imperceptibly negative**. In terms of the operational phase, the impact of the mitigation measures will be to ensure that the Proposed Development and the Overall Project will have in effect net zero GHG emissions when the adaptive onsite measures and the commitment to compensate for the project’s remaining emissions, through CPPAs, are accounted for. Thus, the operational phase of the Proposed Development and Overall Project will be **indirect, long-term, negative and minor adverse**. Thus, in terms of climate, both the construction phase and operational phase of the Proposed Development and Overall Project will be **not significant**.

9.7.6 Decommissioning Phase: Proposed Development & Overall Project

At the decommissioning phase of the Proposed Development & Overall Project, a decommissioning, demolition or refurbishment plan will be prepared to ensure recycling and reuse of materials is maximised.

The effect of the Proposed Development and Overall Project decommissioning phase in terms of climate will be **direct, short-term, negative** and **not significant**.

9.8 Monitoring or Reinstatement Measures

9.8.1 Construction Phase

There is no other proposed monitoring for GHG emissions during the construction phase as GHG emissions will be insignificant as outlined in Section 9.7.1.

9.8.2 Operational Phase

The emission points (backup generators) in the Proposed Development and Overall Project will be governed by an Emission Trading System (ETS) and Industrial Emissions (IE) licence which will be granted by the EPA prior to operations commencing on site. As part of this ETS / IE licence monitoring of the generators will be required. The exact monitoring requirements will be stipulated as a condition within the granted licence. The existing IE Licence for the Permitted Development stipulates that monitoring for CO and NO_x be undertaken every five years.

There is no other proposed monitoring during the operational phase.

9.9 Cumulative Impacts of the Proposed Development

In relation to climate, all global cumulative GHG sources are relevant to the effect on climate change. As a result, the effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed. This is due to the fact that there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other (IEMA, 2022).

Nevertheless, for the current assessment, a detailed cumulative assessment has been undertaken for the Permitted Development, the Proposed Development and the Overall Project, as outlined in Section 9.5.2 (for the Permitted Development), in Section 9.7.3 (for the Proposed Development) and Section 9.7.4 (for the Overall Project) thus ensuring the cumulative impact of the project has been taken into account.

9.10 Compliance With Section 15 Of The Climate Action & Low Carbon Development Act (Amended) 2021

Section 15 of the Climate Action & Low Carbon Development Act (Amended) 2021 states that:

- (2) "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."

The Proposed Development and Overall Project are aligned with the above-mentioned plans, strategies and objectives as outlined below.

In relation to 15.1(a), in respect of the most approved climate action plan (CAP25), the development is fully aligned with the CAP25 and all relevant climate policies. In relation to 15.1(a) the 2025 CAP states that in regard to industry (this also applies to electricity generators):

"A key target for the industry sector is to reduce emissions80% of the sector's emissions fall within EU ETS. This means Ireland's significant industrial emitters comprising of manufacturing companies, primarily in the cement, alumina, food and beverage, pharmaceutical and chemicals sectors are motivated to reduce emissions if they are to remain competitive as the price of EU ETS allowances rise and the volume of free allocations is reduced." (2025 CAP, page 80).

Thus, the indirect electricity emissions and the direct emissions from backup diesel generators will operate within the ETS and will both require greenhouse gas permits under the ETS in order to operate and thus the GHG emissions associated with the Proposed Development and Overall Project will be in line with Section 13.3.5 of the 2025 CAP which stresses the importance of the EU ETS in reducing industry GHG emissions.

The 2025 CAP also stresses the importance of the need for greater renewable energy in the national grid in order to meet the 2030 interim target and the 2050 target, stating that:

"Increased deployment of onshore renewable electricity generation is key to achieving the requirements of the recast EU Renewable Energy Directive and the national climate objective." (2025 CAP, Page 123)

CAP25 has outlined the path towards the electricity target by 2030 of a 75% reduction in GHG emissions compared to 2018. The core measures are:

- Increasing the share of renewable electricity to 80%,
- Indicative Onshore Wind Capacity of up to 9GW,
- Indicative Offshore Wind Capacity of at least 5GW,
- Indicative Solar PV Capacity of 8GW.

In this regard, the developer has committed to a Corporate Purchase Power Agreement which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. In the context of the *Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)*, this proposal can be characterized as 'existing' demand rather than new unforeseen demand growth, given that there is an existing connection agreement to serve the development, which has been factored into EirGrid's energy projections and modelling since the connection agreement was signed in 2017.

In addition, as outlined in the Addendum to Chapter 9 of the EIAR, under Section 13.3.2.9 Emission Trading System, the CAP24¹⁵ states:

"The EU ETS is a cornerstone of the EU's policy to combat climate change and it is a key tool for reducing greenhouse gas emissions cost-effectively. The EU ETS operates on a "cap and trade" principle. The cap is an absolute limit on the level of emissions across the EU ETS marketplace, and all participants must either reduce their emissions in line with their emission allowance, or purchase permits from another market participant that has excess emission allowances to trade. The EU ETS is an important mechanism to drive emissions reductions in Ireland. Revisions for the EU ETS proposed under the EU Fit for 55 package were

¹⁵ "Climate Action Plan 2025 builds upon [last year's Plan](#) by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings and it should be read in conjunction with Climate Action Plan 2024". [Climate Action Plan 2025](#)

formally approved in April 2023 and include significant changes that aim at strengthening the decarbonisation incentive in industry. EU ETS emissions are set to reduce by 62% (previously 43%) compared to 2005, further tightening the cap on all participants. In addition, while industrial emitters currently receive a proportion of free allocation of emissions permits, the updated EU ETS will see free allocation for many industries phased out from 2026, adding further upward pressure to the carbon price.” (CAP24, page 191).

Thus, the indirect electricity emissions and the direct emissions from backup generators will both require greenhouse gas permits under the ETS in order to operate and thus the GHG emissions associated with the Proposed Development and Overall Project will be in line with Section 13.3.2.9 of CAP24 which stresses the importance of the EU ETS in reducing industry GHG emissions. Having regard to the foregoing, the proposal is in accordance with the provisions of CAP24 and CAP25.

Based on the information provided in this Section 15 Report and in the application as whole, the foregoing analysis demonstrates that the planning authority can be satisfied that, by granting permission for the Proposed Development and Overall Project, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15.1(a).

In relation to 15.1(b), in respect of the most approved climate action plan (CAP25), the development is fully aligned with the CAP25 and all relevant climate policies. In relation to 15.1(b), the Long-term Climate Action Strategy was published on the 28th April 2023. In relation to electricity, the Government commits to the full decarbonisation of the electricity system by 2050. In relation to the EU ETS, the Long-term Climate Action Strategy states that *“A strong price signal, as part of a reformed EU ETS, including progressively more restrictive rules on how many allowances will be available within the EU ETS, is expected to drive decarbonisation over the coming decade by increasing the cost to firms in the EU ETS of doing nothing to reduce their emissions”* (DECC, 2023).

The Long-term Climate Action Strategy outlined the importance of (i) completing the actions in the Climate Action Plan, (ii) greater demand side management, (iii) better annual forecasting for the electricity and gas systems and (iv) security of gas supply infrastructure, particularly in the context of electricity generation.

The indicative pathway outlined in the Strategy for electricity includes:

- Build-out of renewable generation capacity, including onshore wind, offshore wind, and solar PV,
- Deployment of zero emissions gas to manage inter-seasonal variability,
- Upgrade of transmission and distribution networks to support significantly increased electricity demand in 2050.

In terms of electricity, the Long-term Climate Action Strategy states:

“Ireland will continue its efforts to decarbonise the electricity sector by taking advantage of its significant renewable energy resources in a way that is competitive, cost-effective and ensures the security of our electricity supply. By doing this, we will also decrease our dependence on imported fossil fuels. As Ireland decarbonises its energy system, demand for electricity will increase and total demand for natural gas will decrease. Ireland must ensure that its decarbonisation efforts are underpinned by security, and affordability, in how we access and use our energy resources” (DECC, 2023).

In relation to the EU ETS, the Long-term Climate Action Strategy states that:

“A strong price signal, as part of a reformed EU ETS, including progressively more restrictive rules on how many allowances will be available within the EU ETS, is expected to drive decarbonisation over the coming decade by increasing the cost to firms in the EU ETS of doing nothing to reduce their emissions” (DECC, 2023).

In relation to data centres, the Long-term Climate Action Strategy states that:

"Energy demand, including data centres, will be expected to operate within Sectoral Emission Ceilings and further signals will be required to locate demand where existing or future electricity grid is available and close to renewable energy generation. Research and development in energy storage and flexibility (such as a science challenge to industry) will be required to put Ireland on a pathway to net zero-carbon data centres" (DECC, 2023).

The Proposed Development and Overall Project is in line with this strategy as the GHG emissions associated with the electricity associated with the project, due to commitments in the CAP25, will reduce in line with national policy and in line with EU policy as outlined in the EU Climate Law (EU, 2021) which has outlined a legally binding target to obtain net zero GHG emissions by 2050. Furthermore, the development is located to avail of the existing electricity grid (including infrastructure delivered on site by the applicant) and is subject to an existing connection agreement.

The Permitted Development, Proposed Development and Overall Project are in line with the Long-term Climate Action Strategy as the electricity associated with the project will operate under the ETS which has, as outlined in the EU Climate Law (EU, 2021), a legally binding target to obtain net zero GHG emissions by 2050. In addition, CAP24 and CAP25 have confirmed that the ETS is the cornerstone for industry (including electricity providers) to reduce GHG emissions in order to achieve net zero emissions by 2050.

Based on the information provided in this Section 15 Report and in the application as whole, the foregoing analysis demonstrates that the planning authority can be satisfied that, by granting permission for the Proposed Development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15.1(b).

In relation to 15.1(c) in respect of the most approved climate action plan (CAP25), the development is fully aligned with the CAP25 and all relevant climate policies. In relation to 15.1(c), which refers to the most recent approved national adaptation framework and approved sectoral adaptation plans, the National Adaptation Framework (NAF) (DECC, 2024) has outlined several actions to help ensure a targeted approach to achieving climate resilience into the future. These include:

- Putting in place updated National Guidance to Sectors for the preparation of Sectoral Adaptation Plans (SAPs),
- Local authorities to adopt Local Authority Climate Action Plans,
- Formalising long term operational support for key sectors,
- Drive community outreach, educating the public on risks, opportunities and impacts of climate change in Ireland and globally,
- Increasing awareness around climate adaptation and resilience,
- Integrating climate adaptation into key national plans and policies.

The NAF (DECC, 2024) further states that in terms of specific actions:

"In response to current and potential future impacts of climate change, there has been a surge in the implementation of relevant policies, tools and mechanisms at the national level to both mitigate and adapt to climate change. Given that the effects will be experienced for decades to come, it is crucial to establish robust, actionable, and effective measures and strategies to prepare for and respond to changing climate conditions. Climate adaptation is essential to reduce vulnerabilities and strengthen resilience to safeguard communities, sectors, regions and ecosystems against climate-related impacts." (page 39)

The NAF (DECC, 2024) defines climate resilience as:

"The capacity of a system, whether physical, social, or ecological, to absorb and respond to climate change and, by implementing effective adaptation planning and sustainable development (including governance and institutional design), to reduce the negative climate impacts while also taking advantage of any positive outcomes." (Page 18)

The Electricity & Gas Networks Sector Climate Change Adaptation Plan (DECC, 2022) identified the key climate impacts for the energy sector as:

- Flooding / changes in precipitation / extreme events,
- Temperature rise,
- Sea level rise,
- Changes in wind energy content.

As outlined in Section 2.3 of the Addendum to Chapter 9 of the EIAR, climate proofing of the project was undertaken using the approaches outlined in the *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (EC, 2013) and *IEMA EIA Guide to Climate Change Resilience and Adaptation* (IEMA, 2020). Both documents outline a methodology for undertaking a risk assessment where there is a potentially significant impact on the project receptors due to climate change. The approach to the assessment is based on the following steps:

- Identify potential climate change risks to a project;
- Assess these risks (potentially prioritising to identify the most severe); and
- Formulate mitigation actions to reduce the impact of the identified risks.

Tables 9.4 and 9.5 of the updated Addendum to Chapter 9 of the EIAR outlined the GHGA significance criteria and Vulnerability Matrix respectively based on this approach.

Under Section 9.5.6 "*Impact of Climate Change on the Operational Phase*" of the updated Addendum to Chapter 9 of the EIAR, it was noted that climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. Changes in climate may lead to a variety of impacts including:

- Increased average temperatures will lead to a greater requirement for cooling of the data centre buildings leading to greater energy use and associated GHG emissions;
- Increased rainfall will lead to a greater risk of flooding;
- Periods of drought may lead to reduction in water availability.

Section 9.5.6.1 of the updated Addendum to Chapter 9 of the EIAR noted that there is:

"the potential for flooding related impacts on site in future years due to climate changes as outlined in Section 3.1 in the absence of mitigation. Chapter 7 (Hydrology) of the EIAR has investigated the likelihood of flooding and has found that there is no current or predicted flood risk (either fluvial, pluvial or coastal) for the site. As outlined in Chapter 7 of the EIAR, the facility will be attenuated with a flow control device, sized to contain a 1-in-100-year storm event and increased by 20% for predicted climate change to limit the surface water discharge from the site during extreme rainfall events.

Thus, in line with the methodology outlined in Table 9.5, the likelihood of extreme weather and flooding was assessed to be of low likelihood and with a low or medium exposure leading to a finding of low vulnerability and thus a non-significant impact. "

In relation to 15.1(c) which refers the most recent approved national adaptation framework and approved sectoral adaptation plans, national and sectoral adaptation plans and 15.1(e) "adapting to the effects of climate change on the state", a detailed flood risk assessment has been completed for the Proposed Development and Overall Project and adequate attenuation and drainage have been designed to account for increased rainfall in future years.

In relation to extreme winds, the appropriate wind loadings are to be calculated in line with the requirements of IS EN 1991-1-4. Lightning protection will be provided for the buildings and designed by a specialist. Hail and fog are not predicted to significantly affect the buildings due to their design.

In relation to wildfires, the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR) (2025), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that could support a problematic wildfire in the project area that may cause some risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location the risk of wildfire is significantly lessened and it can be concluded that the Proposed Development and Overall Project is of low vulnerability to wildfires.

Landslide susceptibility mapping developed by GSI indicates that the Proposed Development and Overall Project Location is not within an area that is susceptible to landslides and there are no recorded historical landslide events at the project location. It can be concluded that landslides are not a risk to the Proposed Development and Overall Project site.

At the detailed design stage chosen building materials will be high quality, durable and hard-wearing and chosen to withstand increased variations in temperature in the future as a result of climate change. Snow loads are to be calculated in line with the requirements of IS EN 1991-1-3 and new Met Eireann reports and mapping published in 2022.

Thus, the granting of permission for the Proposed Development and Overall Project will not be inconsistent with the national and sectoral adaptation plans.

Based on the information provided in this Section 15 Report and in the application as whole, the foregoing analysis demonstrates that the planning authority can be satisfied that, by granting permission for the Proposed Development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15.1(c) and Section 15(e).

In relation to 15.1(d), in respect of the most approved climate action plan (CAP25), the development is fully aligned with the CAP25 and all relevant climate policies. In relation to 15.1(d) the national climate objective, the 2025 CAP has stated that:

"Under the Climate Action and Low Carbon Development (Amendment) Act 2021, Ireland's national climate objective requires the State to 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. The Act also provides for a reduction of 51% in GHG emissions by 2030, compared to 2018 levels.

The European Climate Law set legally binding EU-wide targets of reducing net GHG emissions by at least 55% by 2030, compared to 1990 levels, and achieving net-zero GHG emissions by 2050. Ireland will play its part in achieving the EU-wide 2030 target by meeting its binding targets under the Emissions Trading Scheme, Effort Sharing Regulation and Land Use, Land Use Change and Forestry Regulation" (2025 CAP, page 15)"

Thus, the Proposed Development and Overall Project align with the national climate objective as the Proposed Development and Overall Project will be within the EU ETS which is the cornerstone of the EU's objective to reduce GHG emissions by at least 55% by 2030 (compared to 1990) and to achieve climate

neutrality by 2050. As outlined in the EU Climate Law (EU, 2021) under the Item (13): “*The EU ETS is a cornerstone of the Union’s climate policy and constitutes its key tool for reducing greenhouse gas emissions in a cost-effective way.*”

The 2025 CAP also stresses the importance of the need for greater renewable energy in the national grid in order to meet the national climate objectives stating that:

“Increased deployment of onshore renewable electricity generation is key to achieving the requirements of the recast EU Renewable Energy Directive and the national climate objective.” (2025 CAP, Page 123)

In this regard, the developer has committed to a Corporate Purchase Power Agreement which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy.

Based on the information provided in this Section 15 Report and in the application as whole, the foregoing analysis demonstrates that the planning authority can be satisfied that, by granting permission for the Proposed Development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15.1(d).

In relation to 15.1(e, in respect of the most approved climate action plan (CAP25), the development is fully aligned with the CAP25 and all relevant climate policies. In regard to 15.1(e) the objectives of mitigating greenhouse gas emissions, the Proposed Development and Overall Project has the following benefits which will all help to mitigate greenhouse gas emissions:

- I. The Proposed Development and Overall Project will replace activities which have a higher GHG profile. Data centres represent a significantly more efficient means of data storage when compared to a distributed model of enterprise data storage by individuals and companies (or ‘enterprise sites’). A study published in 2020 by Science Magazine found that while cloud computing productivity has grown globally by 550% between 2010 and 2018, energy consumption rose in tandem during the same period by just 6%, demonstrating the energy efficiency improvements of the industry, most notably by hyperscale data centres.
- II. A range of measures will be employed which is in line with “best practice” as outlined in IEMA (IEMA, 2022) including the following:
 - The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO) to their Irish Data Centers. Subject to availability, it is expected that fuel for the Proposed Development and Overall Project will be renewable diesel.
 - A PV array is proposed on each building E and F will consist of 285 PV modules, each of 300Wp, yielding a total peak power generated of 85.5kWp.
 - A rainwater harvesting system will be used to ensure non-potable process water for cooling needs for the operational development are met with no reliance on the public water mains.
 - Facilitating district heating to a local user for heat or a future heat network.
 - The Proposed Development and Overall Project is designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design PUE of 1.12 as compared to the 1.30 set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development has a design WUE of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.
 - Internal lighting shall be provided by highly efficient, low energy LED luminaires combined with presence detection controls or local switching where appropriate. The lighting design

meets the illumination level requirements of CIBSE Code of Lighting. LED luminaires are also to be used for the emergency lighting installation, which is designed to comply with the requirements of EN 12464 part 1 and IS 3217:2013+A1:2017.

III. Measures will be implemented in line with “best practice” as outlined in IEMA (IEMA, 2022) as outlined below:

- A Corporate Purchase Power Agreement will be entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy.
- Amazon is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target.
- Amazon reached 100% renewable energy in 2023. This includes AWS data centres. As of January 2023, Amazon has announced over 400 renewable energy projects representing 20 gigawatts (GW) of clean energy capacity.”
- In 2022, the electricity consumed in 19 AWS cloud computing regions, including their cloud region in Ireland, was attributable to 100% renewable energy.

Based on the information provided in this Section 15 Report and in the application as whole, the foregoing analysis demonstrates that the planning authority can be satisfied that, by granting permission for the Proposed Development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15.1(e).

In summary, the facility will operate under the ETS and will thus be required to operate within the limits of the system which includes carbon pricing and a linear reduction in GHG emissions going forward. Economy-wide reductions that Ireland achieves towards its own national periodic targets, 2030 to 2050 (and intermediate quantitative targets), will be contributed to by the reductions achieved by those Irish installations that are part of the EU ETS. The 2050 target as outlined under the EU Climate Law is one of achieving climate neutrality ('Net Zero') by 2050 and thus aligns with the commitment Ireland has undertaken under the Climate Action and Low Carbon Development Act 2015 (as amended in 2021) and all reductions achieved by Irish EU ETS-participating installations will contribute towards that.

Based on the above analysis of the different aspects of the statutory obligations under section 15, it is considered that a grant of permission for the Proposed Development would be in compliance with the planning authority’s obligations under section 15.

Firstly, the indirect electricity emissions and the direct emissions from backup generators will both require greenhouse gas permits under the ETS in order to operate and thus the GHG emissions associated with the Proposed Development and Overall Project will be in line with Section 13.3.5 of the CAP25 which stresses the importance of the EU ETS in reducing industry GHG emissions.

Secondly, the electricity associated with the project, due to commitments in the CAP25, will reduce in line with national policy and in line with EU policy as outlined in the EU Climate Law (EU, 2021) which has outlined a legally binding target to obtain net zero GHG emissions by 2050.

Thirdly, the assessment of the Proposed Development and Overall Project has taken into account the relevant national and sectoral adaptation plans and the environmental assessment process has ensured that the Proposed Development and Overall Project is climate proofed.

Finally, a range of mitigation measures will be employed which will ensure that direct and indirect GHG emissions associated with the Proposed Development and Overall Project are minimised with residual GHG emissions fully mitigated through a CPPA.

Based on the above analysis of the different aspects of the statutory obligations under section 15, it is considered that a grant of permission for the proposed development would be in compliance with the planning authority's obligations under section 15 as a whole.

9.11 References

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