15. CLIMATE

15.1 INTRODUCTION

This chapter comprises an assessment of the likely significant effects on climate associated with the proposed project, which comprises 13 wind turbines and ancillary works, including Grid Connection Route (GCR) and Turbine Delivery Route (TDR). A full description of the proposed project is presented in Chapter 2 (Description of the Proposed Project).

The climate assessment takes into consideration the proposed wind farm area, grid connection route, turbine delivery route and estimated energy production from the proposed turbines.

This chapter provides a baseline assessment of the setting of the proposed project in terms of climate and discusses the likely significant effects that the construction, operation and decommissioning of the proposed project will have. Where required, mitigation measures designed to avoid, reduce, or offset the likely significant effects are described.

The climate assessment comprises two elements:

- 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 project's vulnerability to climate change and identifies adaptation measures to increase project resilience.

15.2 STATEMENT OF AUTHORITY

This chapter was prepared by Sarah Berry who is a Principal Climate Consultant in the Air Quality and Climate section of AWN Consulting, a Trinity Consultants Company. She holds a BSc in Physical Geography from the University of Leeds and is a Practitioner Member of the Institute of Sustainability and Environmental Professionals. She has 10 years' experience in climate change and sustainability, with expertise in Greenhouse Gas (GHG) Assessments and Climate Change Risk Assessments for Environmental Impact Assessments. Sarah has prepared climate chapters for EIARs for proposed developments across Ireland including large residential developments, wind farms and renewables, industrial developments, energy centres, data centres and wastewater treatment works. She also has experience in GHG permitting, accounting and verification. Her experience includes conducting strategic sector-specific GHG audits across a range of industries (data centres, industrial facilities, hospitals, manufacturing, power stations and airports). Relevant to this proposed project, Sarah has prepared EIAR Climate Chapters for several similar wind farm projects such as Carrowkeel Wind Farm and Lissinagroagh Wind Farm.

This chapter was reviewed by Ciara Nolan (Principal Air Quality Consultant) who holds a BSc (Eng) in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). Ciara has over nine years of experience in the field of air quality consultancy. She has prepared the air quality and climate EIAR chapters for a range of developments including wind energy, industrial, pharmaceutical, data centre, residential and commercial. Relevant to this proposed project,

Ciara has prepared EIAR Climate Chapters for several similar wind farm projects including Upperchurch Wind Farm, Knocknamona Wind Farm, Ummeras Wind Farm, Crockahenny Wind Farm.

15.3 Limitations Encountered in Compiling Information

No limitation / difficulties were encountered during the writing of the Climate Chapter.

15.4 Scoping and Consultation

No Scoping exercise or consultation was carried out regarding the climate assessment.

15.5 Assessment Methodology

15.5.1 Relevant Legislation and Guidance

In common with all environmental legislation, in Ireland climate legislation is driven primarily by international agreements or European Directives that are then transcribed into domestic law by the Government of Ireland. This is interpreted through European and domestic policy instruments that clarify aspects, objectives, targets and requirements described in the legislation.

15.5.1.1.1 Legislation

The **United Nations Paris Agreement** (United Nations, 2015) treaty binds signatory nations to a commitment to hold global average temperature increase well below 2°C above pre-industrial levels with efforts to limit the increase to 1.5°C below pre-industrial levels. Signatories commit to Nationally Determined Contributions which are self- defined climate pledges made by countries in response to climate change, which also includes the direction of finance. Adaptation to the adverse impacts of climate change and lowering greenhouse gas emissions should be undertaken in an equitable manner so as not to disadvantage populations on lower incomes or those most at risk from climate change.

Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (European Parliament and Council, 2021) follows from the Paris Agreement and writes into EU law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas (GHG) emissions by at least 55% by 2030, compared to 1990 levels. These targets are also applied to member states.

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (European Parliament and Council, 2014) acknowledges that climate change will play a crucial role in the sustainable development of society. Directive 2014/52/EU requires assessment of the impact of specific types of new development on the climate. There is a requirement for the quantification of greenhouse gases from a development, and an assessment of the risk posed to specific types of new development by the adverse effects of climate change.

The **Climate Action and Low Carbon Development Act 2015** (Government of Ireland, 2015) enables Ireland '*to pursue, and achieve, the transition to a low carbon, climate resilient and*

environmentally sustainable economy by the end of the year 2050'. This is referred to in the 2015 Act (as amended) as the '*national transition objective*'. The 2015 Act (as amended) made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The **Climate Action and Low Carbon Development (Amendment) Act 2021** (Government of Ireland, 2021) provides the framework for Ireland to achieve a climate resilient and climate neutral economy by the end of the year 2050. The Act allows for the setting of carbon budgets and sectoral emissions ceilings to apply to sectors of the economy whilst promoting climate justice and just transition to the climate resilient and climate neutral economy. Carbon budgets are determined based on the requirements for reductions in GHG described in *EU Regulation 2018/842* and *EU Regulation 2018/842*. The Climate Action and Low Carbon Development (Amendment) Act 2021 should be read together with the Climate Action and Low Carbon Development Act 2015 and together are referred to in this report as the "Climate Act".

15.5.1.1.2 Policy

The **European Green Deal** published by the European Commission in December 2019, provides an action plan which aims for the EU to achieve climate neutrality by 2050. The EU Green Deal highlights a reduction in emissions of 55% in comparison to 1990 levels by 2030 and 90% by 2040. The deal outlines plans for a just and fair transition to a climate neutral society though funding and social investment, carbon pricing, the Emissions Trading Scheme, green industry, the circular economy and stakeholder engagement in the processes at every level.

The **2021 EU Strategy on Adaptation to Climate Change** (European Commission, 2021a) sets out the pathway to prepare for the unavoidable impacts of climate change. The aim is that "by 2050, when we aim to have reached climate neutrality, we will have reinforced adaptive capacity and minimised vulnerability to climate impacts…"

The latest iteration of the Government of Ireland's ***Climate Action Plan*** (CAP25) (Government of Ireland, 2025a) was published in 2025 updating many of the suggested measures and actions required to achieve carbon budgets and sectoral emissions ceilings from CAP24 (Government of Ireland, 2024). Both CAP24 and CAP25 should be read together. The plans taken together provide the roadmap for halving Ireland's emissions by 2030 and achieving carbon neutrality by 2050. CAP25 details the five-year carbon budget periods, shown in Table 15-1, and the Sectoral Emissions Ceilings, shown in Table 15-2, as required by the Climate Act.

Table 15-1: Carbon Budgets for the CAP25 5-Year Periods

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

Table 15-2: CAP25 Sectoral Emission Ceilings for 2030

Sector	Baseline (Mt CO_2e) 2018	Carbon Budgets (Mt CO_2e) 2021-2025	2026-2030	2030 Emissions (Mt CO_2e)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
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, CAP25 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

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. The target for renewables on the national grid is 80% by 2030 which includes nine gigawatts (GW) of onshore wind energy. This is a key target and action within CAP25.

The latest EPA projections show an 11% reduction in GHG emissions by 2030 compared to the 2018 level under the With Existing Measures (WEM) scenario, and a 29% reduction under the With Additional Measures (WAM) scenario. Both these predictions fall considerably short of the actual targets.

The **Long-Term Strategy on Greenhouse Gas Emissions Reductions** (Government of Ireland, 2023) provides the indicative pathways beyond 2030 on how Ireland will transition towards carbon neutrality by 2050. The strategy is intended to bridge the gap between the short-term objectives of the Climate Action Plans and the longer-term objectives of EU Climate Law and Ireland's National Climate Objective.

The **National Planning Framework (First Revision)** (Government of Ireland, 2025b) specifies policies relevant for the proposed project:

- National Policy Objective 69: Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets.
- National Policy Objective 70: Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a climate neutral economy by 2050.
- National Policy Objective 71: Support the development and upgrading of the national electricity grid infrastructure, including supporting the delivery of renewable electricity generating development.
- National Policy Objective 78: Promote sustainable development by ensuring flooding and flood risk management informs place-making by avoiding inappropriate development in areas at risk of flooding that do not pass the Justification Test, in accordance with the Guidelines on the Planning System and Flood Risk Management, and taking account of the potential impacts of climate change on flooding and flood risk, in line with national policy regarding climate adaptation.

15.5.1.1.3 Climate Change Vulnerability Policy

The **Second National Adaptation Framework** (NAF) (Government of Ireland, 2024b) outlines a comprehensive, whole-of-government and whole-of-society approach to climate adaptation. Its core objective is to enhance Ireland's resilience to a wide range of climate risks, including extreme weather events, flooding, drought, biodiversity loss, sea level rise, and rising temperatures. The NAF sets out the roles of the Taoiseach, Government and non-governmental organisations, incorporates an evidence base for climate change and incorporates sectoral and local requirements and indicators for adaptation planning.

In relation to the built environment, the NAF states in Chapter 3, "deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment". Within the NAF it mentions that there is a risk of damage to buildings and structures from severe weather events such as high winds and intense rainfall. New development should accommodate predicted future climate change impacts without requiring major redesign or redevelopment in the future, which may be costly and inefficient. This will require facilitating innovative building design, new materials and standards (to accommodate hotter summers while withstanding changes in precipitation patterns and more intense storms for example).

The **National Climate Change Risk Assessment** (NCCRA) (Environmental Protection Agency, 2025) was required as part of the 2021 CAP. The NCCRA approached the risk assessment through:

- **Hazard** - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
- **Exposure** - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.
- **Sensitivity** - refers to the degree to which a system or asset is affected by climate hazards. It reflects how vulnerable something is to changes such as temperature extremes, flooding, or drought, based on its physical, functional, or ecological characteristics.
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity.
- **Risk** - the potential for adverse consequences for human or ecological systems.

Compilation of the NCCRA was undertaken using scenarios from the fifth Intergovernmental Panel on Climate Change Assessment Report (AR5). The NCCRA used a high concentration scenario resulting in a predicted average global temperature increase of 4.3°C by 2100 (RCP8.5) generally accepted as an extreme worst-case scenario, and a moderate scenario (RCP4.5) where emissions are predicted to peak by 2040 and then decline resulting in an average global temperature increase of between 2.5°C and 3°C. Both scenarios are considered conservative for Ireland as they assume that emissions targets are not met.

15.5.1.1.4 Local Policy

Mayo County Council's Climate Action Plan sets out a five-year roadmap to make the county climate-resilient, low-carbon, energy-efficient, and biodiversity-rich. It outlines how the council will reduce its own emissions while also guiding and influencing wider community and sectoral climate action. The key objectives of the plan include reducing greenhouse gas emissions, strengthen climate resilience, support community and sectoral action and protect and restore biodiversity.

The Mayo County Council Climate Action Plan also addresses the risks that climate change poses to infrastructure, individuals, communities and businesses. It states Mayo is already experiencing rising temperatures, changing rainfall patterns, sea level rise and more frequent extreme weather events. Mayo County Council commissioned a Climate Change Risk Assessment 2024-2029 which highlighted flooding (fluvial and pluvial), heatwaves and drought are all likely to increase in future climate projections, severe windstorms will stay the same and some hazards such as cold spells and heavy snowfall are expected to decrease in frequency. Adaptation measures are set out in the Mayo County Council CAP including:

- Flood relief schemes, risk mapping and emergency response planning;
- Coastal erosion management, dune restoration and restricting development in high-risk areas;
- Sustainable Urban Drainage Systems and upgrading stormwater networks;

- Shading and greening in urban areas and water resource management;
- Drought resilient land management and expanding green and blue infrastructure;
- Fire- risk monitoring and public awareness campaigns; and
- Resilient design standards for infrastructure projects.

The Galway County Development Plan 2022–2028 similarly recognises the need to address climate change through both mitigation and adaptation measures and supports the transition to a low-carbon and climate-resilient economy. The Plan seeks to promote renewable energy generation, improve energy efficiency, protect and enhance biodiversity, and strengthen the resilience of communities, infrastructure and the natural environment to the impacts of climate change. The objectives of the Plan are aligned with national and regional climate policy and support the delivery of renewable energy projects which contribute to the decarbonisation of the electricity sector.

15.5.2 Guidance

The principal guidance and best practice documents which the assessment of potential impacts on climate are based on are summarised below.

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has also considered national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised herein:

- Environmental Protection Agency (2024) National Climate Change Risk Assessment Technical Guidance for Sectoral Assessment;
- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2025);
- International Standards Organisation (2021) ISO 14091:2021 'Adaptation to Climate Change;
- Institute of Sustainability & Environmental Professionals (ISEP) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the ISEP GHG guidance) (ISEP, 2026);
- ISEP Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the ISEP Climate Change guidance) (ISEP, 2020a);
- ISEP GHG Management Hierarchy (hereafter referred to as the ISEP GHG Management Hierarchy) (ISEP, 2020b);
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021); and
- Carbon Management in Infrastructure and Built Environment - PAS 2080 (The British Standards Institution, 2023).

15.6 METHODS

15.6.1 Greenhouse Gas Assessment

The assessment of GHG emissions is quantified using the categories described in BS EN 15978:

- **Product Stages (Category A1 to A3)**

The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and associated carbon impacts that arise) from transforming the raw materials into construction products.

- **Construction (Category A4 to A5)**

These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.

- **Use Stage (Category B1 to B7)**

This covers a wide range of sources from the GHG emissions associated with the operation of the building (B1), maintenance (B2), repair (B3), refurbishment (B4) and replacement (B5) of materials, and operational energy use (B6) and water use (B7).

- **End of Life Stages (Category C1 to C4)**

The eventual deconstruction and disposal of the existing building or infrastructure at the end of its life takes account of the on-site activities of the demolition contractors. No "credit" is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.

15.6.1.1.1 Construction Phase

15.6.1.1.2 Greenhouse Gas Assessment (GHGA) – TII Carbon Tool

The GHGA has been conducted following the TII PE-ENV-01104 guidance (TII, 2022). PE-ENV-01104 (TII, 2022) recommends the calculation of the construction stage GHG emissions, including embodied carbon, using the TII Online Carbon Tool. The TII Online Carbon Tool (TII, 2025) has been commissioned by TII to assess GHG emissions associated with road or rail projects using Ireland-specific emission factors and data. However, the tool is transferable to other development types such as the proposed project as material types and activities are applicable. The TII Carbon Tool (TII, 2025) has an extensive materials library and uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013).

The carbon emissions are calculated by multiplying the emission factor by the quantity of the material/ activity that will be used over the entire construction / maintenance phase. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent).

The TII Carbon Tool has been used to assess the GHG emissions associated with the site clearance works, land use change, excavation, material transport, embodied carbon associated with materials, construction activities and construction worker travel for the proposed project. Embodied carbon refers to the sum of the carbon needed to produce a good or service. It

incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site.

The construction phase of the proposed project will result in GHG emissions from various sources:

- Site clearance activities;
- Construction materials; and
- Construction works (including excavations, fuel usage, construction worker travel, waste etc.).

Information on the above elements were provided by the Design Team for input into the carbon tool. Standard maintenance, as indicated through the TII Carbon Tool (TII, 2025), required over the operational phase has also been considered as part of the embodied construction emissions. Precautionary estimates have been used in this assessment where detailed information was not available regarding proposed construction materials and exact methodologies.

15.6.1.1.3 Turbine Manufacture Lifecycle Assessment

As described in Chapter 2, design flexibility has not been sought for this project, and the proposed turbines will have an overall blade tip height of 150 m, a rotor diameter of 136 m, a hub height of 82 m. On this basis, the Lifecycle Carbon Assessment (LCA) for the Vestas V136-4.2 (Vestas, 2022) wind turbine has been obtained from public information published by Vestas and used as a proxy.

The LCA quantifies the power consumption associated with the production, operation, transport and end-of-life of the wind turbines. The LCA was calculated for a specific sample 100 MW wind farm scenario made up of 24 turbines under medium wind conditions (average 8.5 m/s), with additional sensitivity scenarios. For the purposes of this assessment the data provided in the LCA should be considered as proxy data for the calculation of embodied carbon. The assessment also quantifies the greenhouse gas emissions associated with the production, operation, transport and end-of-life of the wind turbines on the basis of the embodied carbon per unit of energy generated for the modelled scenario.

The energy balance associated with the wind power production during its lifetime and the energy associated with the manufacturing, operation, transport, dismantling and disposal was calculated on the modelled site-specific basis as the energy balance is based on the expected GWh of production during its lifetime. The GHG balance is expressed in terms of the time taken for the energy consumed by the turbine through its full life cycle to be repaid in terms of wind energy exported to the electricity grid compared to the equivalent fossil fuel powered electricity generation and is reported in the LCA in gCO_2e/kWh generated. The embodied carbon for the turbines was calculated on this basis.

The Vestas LCA reports that the typical payback period for the type of turbine specified is approximately 6.1 months for the scenario modelled in the LCA, however it can be as little as two months for some installations. For this assessment a conservative assumption of 6.1 months is assumed.

Whilst the LCA included a list of materials included within each individual turbine it was not possible to locate emission factors for all of the materials, therefore a calculation of embodied carbon on this basis was not undertaken.

15.6.1.1.4 Grid connection route and turbine delivery route

The grid connection route for this proposed project is set out below:

- Grid Connection Route: a 33 kV private grid connection cable (circa 8.7 km in length) from the on-site control building to the proposed 110 kV substation. The proposed 110 kV substation in the townland of Killamanagh Co. Galway with associated works (including two steel lattice interface masts) to connect to an existing overhead line in the townlands of Killamanagh and Bunnasillagh.

Works required as part of the turbine delivery route are considered temporary and are outside the scope of this assessment.

15.6.1.1.5 Operational Phase

There will be no greenhouse gas emissions from the operation of the wind turbines. However, due to the displacement of electricity which otherwise would have been produced from fossil fuels, there will be a net benefit in terms of greenhouse gas emissions. The savings are calculated and compared to Ireland's 2030 sectoral emissions ceilings.

In order to quantify these GHG savings from the proposed project relative to fossil fuel energy production, the GHG emissions produced by a typical fossil fuel plant generating the equivalent amount of energy (based on the carbon intensity of electricity generation in Ireland (SEAI, 2025)) has been calculated. The GHG emissions associated with an equivalent fossil fuel plant generating 149,638 MWh of energy will include emissions of CO_2, nitrous oxide (N_2O) and methane (CH_4). The most recent (2025) figure for carbon intensity of electricity generation in Ireland is 226.3 gCO_2e/kWh (SEAI, 2025). The CO_2 equivalent emissions of N_2O and CH_4 have been calculated using the global warm potentials in 6th Assessment Report IPCC Guidelines.

Vehicular traffic is often a dominant source of greenhouse gas emissions as a result of developments. However, due to the nature of the proposed project, a relatively low volume of vehicles will be required for maintenance activities during operation as reported in EIAR Chapter 17, therefore emissions from operational vehicles have been scoped out of this assessment.

15.6.1.1.5.1 Decommissioning Phase

Vehicles related to the decommissioning phase could give rise to CO_2 emissions. It is not predicted that this project will involve the use of a significant number of vehicles during the decommissioning phase. Therefore, emissions from vehicular traffic have been scoped out of this assessment.

In the decommissioning phase, the turbines are dismantled, and the site is remediated to the agreed state (see EIAR Chapter 2 for more detail). End-of-life recycling of metals will be carried out at the wind farm in order to reduce the climate impact, as per the Vestas V-136 LCA. As per the LCA, the majority of the metal components that are primarily mono-material (e.g. gears, transformers, tower sections, etc.) will be recycled with other materials recycled at variable rates based on technology and market conditions at the point of disposal. It is expected that the reinforced concrete foundation bases will remain in-situ. Decommissioning has been considered as part of the turbine LCA and payback periods (discussed in Section 15.6.1.1.3), and is typically a small proportion of the GHG emissions associated with a wind farm project. The impact of

decommissioning on the proposed project's GHG emissions is therefore scoped out from further assessment.

15.6.1.1.5.2 Greenhouse Gas Assessment Significance Criteria

The significance of the impacts of GHG emissions on the climate is an area of scientific consensus that is described clearly in the IPCC AR6 reports, and as such all GHG emissions are considered to contribute adversely towards climate change.

In accordance with ISEP and TII guidance, the significance of the impacts of GHG emission resulting from a given project is based on how it contributes to the overall GHG emissions within the sectoral and national carbon budgets and whether that project contributes or not to the CAP25 objective for Ireland to achieve carbon neutrality by 2050, that is that a project contributes to reducing GHG emissions. This process requires an assessment of the quantified GHG emissions against the sensitivity of receptors (Ireland's national GHG targets or National Climate Objective), qualification of the potential measures that might mitigate against GHG emissions, and a degree of professional judgement that takes account of the balance of all of these factors. Both the ISEP and TII guidance documents are explicit in this concept.

ISEP Supplementary Guidance (2026) (Assessing Greenhouse Gas Emissions and Evaluating their Significance) highlights the importance of mitigation in determination of significance, committing the project to go further than minimum regulatory compliance. This is particularly relevant in the context of the severity of the current climate position and potential exceedance of the 1.5°C Paris Agreement target. It explains it is no longer sufficient for developments to comply with national policies or regulatory standards as mitigation and achieve non-significant effects. It determines embodied carbon must be addressed and generalised measures found in a Construction Environmental Management Plan (CEMP) cannot be relied upon to materially reduce significance. Where no sufficient and meaningful mitigation is proposed which supports an applicable 1.5°C or net zero compatible trajectory, beyond minimum compliance with current regulations, this would typically indicate a major or moderate, significant adverse effect.

The ISEP points set out above and the TII definitions set out in Table 15-3: are well aligned but the ISEP guidance goes a step further in requiring mitigation beyond 'good practice'.

Acknowledging the ISEP 2026 guidance, the primary criteria used in determining the significance of effects on climate are those set out in the TII guidance and the 2022 ISEP guidance. Where possible, additional mitigation beyond current regulatory requirements have also been included to further reduce the impact to climate. In order to streamline the process and provide accountability, the criteria outlined in PE-ENV-01104 (Transport Infrastructure Ireland, 2022) and reproduced in ISEP 2022 are used together with 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 15-3: TII Significance Criteria for Greenhouse Gas Assessments

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

15.6.1.1.5.3 Greenhouse Gas Assessment Assumptions

For the purposes of this GHGA, data assumptions have been made and are set out in Table 15-4.

Table 15-4: Greenhouse Gas Assessment Assumptions

Phase	GHG Assessment Category	Assumptions / basis of calculations
Construction	Materials	All materials are external to turbines (turbine materials are included in the LCA) and have been provided by the Design Team.
	Material transport	All material transport assumed to be HGV (average). Travel distance assumed to be 50 km each way.
	Clearance and demolition	Site preparation and clearance of agricultural land.
	Land use change and vegetation loss	Removal of agricultural land (zero rated emissions factor).
	Excavation	Excavation volumes provided separately for main works and GCR. Re-use of excavated materials on site assumed to be 100% for main works, confirmed by Design Team. Re-use values for GCR provided by Design Team.
	Construction energy	Proxy data used from a similar wind farm in lieu of primary data.
	Construction worker travel to site	Proxy data used from a similar wind farm in lieu of primary data.
	Construction waste disposal	Due to the nature of the proposed project, very little waste is anticipated. Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions.
	Construction waste transport	Scoped out in line with ISEP (Institute of Sustainability and Environmental Professionals) guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Construction water	Scoped out in line with ISEP (Institute of Sustainability and Environmental Professionals) guidance- associated GHG emissions are predicted to be a small proportion of total emissions
Operation	Operational energy	See Section 15.8.2.1.4
	Operational transport	No predicted significant effect due to the relatively low volume of vehicles required for maintenance activities during operation See Section 0.

Phase	GHG Assessment Category	Assumptions / basis of calculations
	Operational waste disposal	Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Operational waste transport	Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Maintenance	Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Landscaping and vegetation	Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Operational water	Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Avoided emissions	Excavated material from the construction phase to be reused on site which would otherwise end up in landfill (50 km roundtrip via 20t capacity HGV)

15.6.2 Climate Change Risk Assessment

The CCRA involves determining the vulnerability of the proposed project to climate change. This requires an analysis of the sensitivity and exposure of the proposed project to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021b); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (Institute of Sustainability & Environmental Practitioners, 2020a).

The baseline environment information provided in Section 15.7.3, future climate change modelling, and input from other experts working on the proposed project (i.e. hydrologists) should be used to assess the likelihood of a climate risk.

An initial screening of risk during the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed project assets (i.e. receptors) and their exposure to climate change hazards.

The proposed project asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 provides the list of asset categories and climate hazards to be considered, as per

the below. 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.

First an initial screening of physical hazards is carried out. This is a qualitative screening which intends to only proceed with relevant hazards. Next, a sensitivity analysis is conducted and 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.

15.6.2.1.1 Climate Change Risk Assessment Significance Criteria

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed project to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed project to various climate hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 15-5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

The PE-ENV-01104 guidance 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. Therefore, the impact from climate change on the proposed project can be considered to be not significant.

However, 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. According to PE-ENV-01104, an assessment of construction phase CCRA impacts is only required if a detailed CCRA is required.

Table 15-5: Climate Change Risk Assessment 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

The screening CCRA, detailed in Section 15.8.3.1.2, did not identify any residual medium or high risks to the proposed project as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase was scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 15.9.2.

15.7 Receiving Environment

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

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland, and the baseline is determined in relation to this study area.

15.7.1 Current Greenhouse Gas Assessment Baseline

Data published in July 2026 (Environmental Protection Agency, 2026a), indicates that Ireland exceeded, without the use of flexibilities, its 2025 annual limit set under EU's Effort Sharing Regulation (ESR) (EU 2018/842) by 5.01 $MtCO_2e$. However, the reported emissions for 2025 represent the third consecutive year in which Ireland's emission were below 1990 levels by 5.5%. Emissions Trading Scheme emissions have decreased by 52.4% or 11.8 $MtCO_2e$ compared to 2005 and Effort Sharing Regulation emissions decreased by 11.8% or 5.6 $MtCO_2e$. Ireland is now a net 3,198 $ktCO_2e$ distant from its target under the Effort Sharing Regulation.

The EPA estimate that 2025 total national GHG emissions, excluding LULUCF, have decreased by 2.3% on 2024 levels to 52.65 $MtCO_2e$. The sector with the highest emissions in 2025 was agriculture at 38.7% of the total, followed by transport at 22.0%. For 2025, total national emissions (including LULUCF) were 55.16 $MtCO_2e$ (see Table 15-6). Emissions from the energy

industries sector decreased for the fourth consecutive year by 7.1% in 2025. This reduction can be attributed to an increase in imported electricity as well as increased renewable generation. Renewables accounted for 40.6% of electricity generation in 2025.

The current estimates of National greenhouse gas emissions (including LULUCF) in 2025 are 14.5% below 2018 levels, at considerable variance from the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021 to 2025 Ireland has used 99.6% or 293.9 $MtCO_2e$ of the 295 $MtCO_2e$ Carbon Budget for the five-year period 2021-2025. This leaves 1.1 Mt CO_2e of the budget available to be carried over into budget two for 2026-2030. In order to achieve Ireland's climate ambition of a 51% reduction by 2030, annual emission reductions of over 10% are required for the next five years.

In relation to compliance with the sectoral emissions ceilings (SECs), the provisional GHG emissions estimates (see Table 15-6) indicate that four sectors, Buildings (Residential), Buildings (Commercial and Public), Agriculture and Other, have stayed within their sectoral emissions ceilings. The other three sectors, Electricity, Transport and Industry have exceeded their sectoral emissions ceilings. The EPA state that the National Climate objective of a 51% reduction by 2030 will be unattainable unless every sector meets its indicative percentage reduction target.

Table 15-6: Trends in National GHG Emissions 2021 – 2025

Sector *Note 1*	2021	2022	2023	2024	2025	Total	Sectoral Emissions Ceiling 2021-2025	% SEC 2021-2025 Used
	$MtCO_2e$							
Electricity	9.82	9.62	7.50	6.89	6.30	40.12	40	100.3%
Transport	11.19	11.88	11.93	11.78	11.61	58.40	54	108.1%
Buildings (Residential)	6.71	5.62	5.23	5.49	5.21	28.26	29	97.4%
Buildings (Commercial and Public)	1.42	1.38	1.34	1.44	1.39	6.97	7	99.6%
Industry	7.25	6.82	6.47	6.20	6.00	32.74	30	109.1%
Agriculture	21.97	21.78	20.72	20.44	20.40	105.30	106	99.3%
Other *Note 2*	1.82	1.85	1.73	1.64	1.75	8.79	9	97.6%
LULUCF	2.87	2.47	2.97	2.51	2.51	13.33	-	N/A

National Total (incl. LULUCF)	**63.05**	**61.42**	**57.89**	**56.38**	**55.16**	**293.90**	**295**	**99.6%**
Note 1 Reproduced from latest emissions data from the EPA (EPA, 2026).								
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).								

15.7.2 Future Greenhouse Gas Assessment Baseline

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, 2022) and ISEP guidance (ISEP, 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*".

The future baseline will be determined by Ireland meeting its targets set out in the CAP25, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted 'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013' (hereafter referred to as the Regulation) (European Union, 2018) to meet the commitments under the Paris Agreement. The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 by Regulation (EU) 2023/857, and Ireland must now limit its ETS and non-ETS greenhouse gas emissions by at least 42% by 2030. The EU Regulation 2026/667 adds an additional interim target of achieving 90% reduction by 2040. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

In May 2026, the EPA released the report Ireland's Greenhouse Gas Emissions Projections 2025-2030 (EPA, 2026b), which includes total projected emissions and a breakdown of projected emissions per sector under the 'With Existing Measures' and 'With Additional Measures' scenarios. The EPA projections indicate that currently implemented measures (With Existing Measures) will achieve a reduction of 12.7% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the higher ambition (With Additional Measures) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 23.4% by 2030, still short of the 42% reduction target.

The EPA GHG emissions projections report for 2025 - 2030 (EPA, 2026b) states that Ireland is not on track to meet the 51% emissions reduction target by 2030 (compared to 2018). Full

implementation of a wide range of policies and plans across all sectors that deliver carbon savings is required to achieve a projected reduction of 25%.

The estimates of GHG emissions from the EPA for the 2021 – 2025 period indicate that the first carbon budget for 2021 – 2025 will be met but that Budget period 2 (2026-2030) of 200 $MtCO_2e$ is expected to be exceeded by 53 to 81 $MtCO_2e$.

15.7.3 Current Climate Change Risk Assessment Baseline

The region of the proposed project has a temperate, oceanic climate, resulting in mild winters and cool summers. This baseline data is derived from the European Centre for Medium-Range Weather Forecasts (ECMWF) ERA5 data reanalysis and includes observed data from meteorological weather stations in Ireland and recorded data from 1950-2020. This method has been chosen to ensure data can be analysed at the daily level and harmoniously compared with future scenarios. The baseline time-period referred to in this assessment was from 1991-2020 and is specific to County Mayo.

15.7.3.1.1 Precipitation

Figure 15-1 shows the climatology for the 30-year baseline period from 1991 to 2020 indicating the wettest months are from October through to January, with December being the wettest month (130 mm) with average monthly precipitation 122 mm across the winter period. The driest month on average was April (89 mm), with February through to July also experiencing lower than average rainfall (<108 mm). Ireland and Mayo's precipitation patterns are strongly influenced by its oceanic climate, with the wettest months typically coinciding with periods of frequent low-pressure Atlantic storm systems. This is evident in Mayo's climatology, where substantial rainfall occurring across the winter, often accompanied by single-day precipitation maximums exceeding 32 mm.

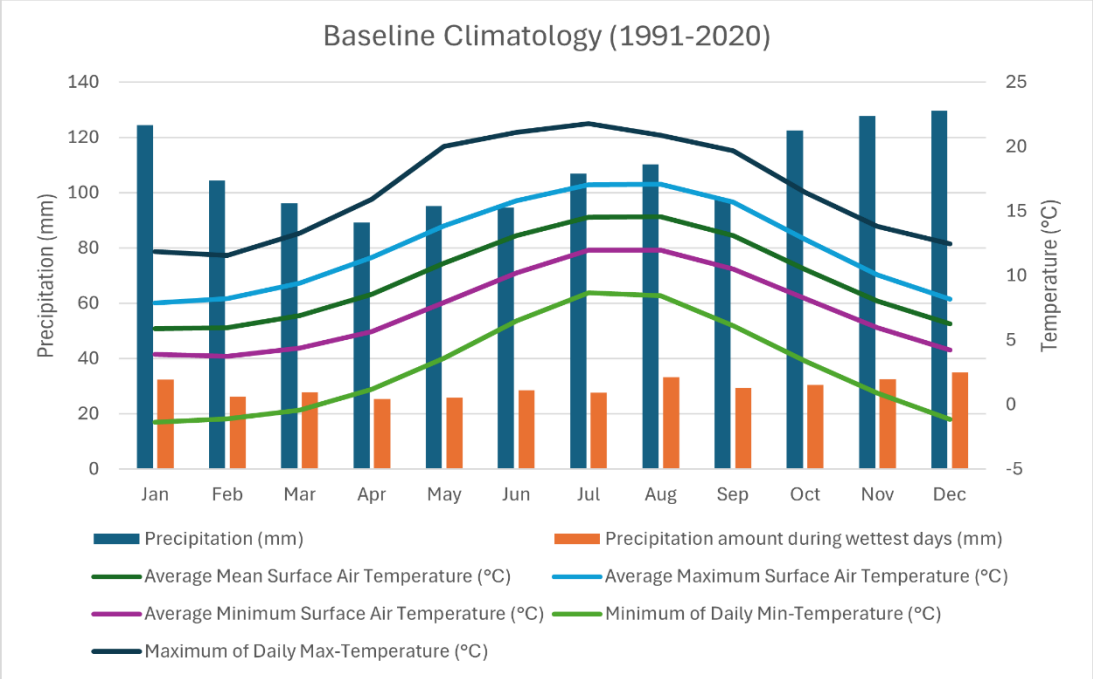


Figure 15-1: Baseline Climatology for Mayo (1991-2020)

15.7.3.1.2 Temperature

July and August are the warmest months with marginal differences in mean temperature (14.5°C), with average mean surface temperatures across the summer months (June – August) greater than 14°C. Average maximum temperatures across May-September range from 13°C – 17°C. July is the warmest month for maximum daily temperatures (21.8°C) which showcases the higher value ranges recorded during a particular month.

January and February are the coldest months with average mean surface air temperatures of 5.9°C and average minimum temperature of 3.8°C. For daily minimum temperatures which reference the lowest range values (10th percentile range) of the data, January (-1.4°C) is the coldest with February and December each experiencing daily lows of (≤ -1°C). March also experiences daily minimums of less than or equal to 0°C.

15.7.3.1.3 Wind

Historical records show Mayo has experienced several severe storms, with wind gusts exceeding 100 km/h, and records in Ireland were set in the last decade, including a national record for wind speed during Storm Éowyn in January 2025. Storm activity is concentrated in winter (December–February), with an average of eight named storms annually (Met Éireann, 2025).

Historical data was taken from Knock Airport Weather Station from 1996-2020 (data collection at this weather station began in 1996) approximately 63 km from the proposed project site and indicates a mean monthly 10 m wind speed of 10 knots (19 km/h) and mean maximum gusts greater than or equal to 46 knots (85 km/h) (Met Éireann, 2025).

15.7.3.1.4 Summary

Overall, the baseline climatology for the proposed project site and region shows evidence of high rainfall across the year. Winters are mild with average minimums greater than 4°C and summers are relatively mild, with average maximums of 16°C and daily maximums over 20°. However, while this maximum is not significant for extreme heat or prolonged drought impacts, wildfires have been noted across the county, for example 74 gorse fires were recorded in 2021 (Mayo County Council Climate Action Plan, 2024). Other notable historic climatic events in Mayo include (Mayo County Council Climate Action Plan, 2024):

- Recent experiences of river and pluvial flooding events in 2020, 2021, 2022.
- Severe windstorms are currently experienced on a frequent basis in Mayo and result in wide-ranging impacts, including damage to buildings and infrastructure (e.g. Dooagh National School), and disruptions to energy supply and transport networks across the county.
- Mayo experienced both a heatwave and drought in 2018 and 2021, with heatwaves recorded in 2022. These events included, amongst others, increased demand on water resources and recreational areas, detrimental impact on freshwater quality, and contributed to the development of uncontrolled fires (e.g. high temperatures in 2021 lead to 74 gorse fires).

15.7.4 Future Climate Change Risk Assessment Baseline

15.7.4.1.1 Climate Change Impacts and Projections for Ireland

Ireland is already experiencing increased annual rainfall in the north and west, with more variable patterns in the south and east (EPA, 2021). Key risks identified by the EPA relevant to the Ireland include:

- Increased likelihood of more frequent and intense North Atlantic low-pressure systems bringing high rainfall and high winds;
- More intense rainfall periods which may lead to pluvial flooding and elevated fluvial levels; and
- Longer dry spells and increased temperatures will elevate the risk of wildfire.

15.7.4.1.2 Climate Modelling and Planning

International best practice and national policy such as the NCCRA (2025), IPCC (2023), and Transport Infrastructure Ireland (TII, 2022) recommends using two emission scenarios to project future climate change. This includes moderate and high emission scenarios (RCP4.5 and RCP8.5 respectively) for future planning. These Representative Concentration Pathways (RCPs) reflect varying levels of global climate mitigation explained herein.

- RCP 4.5 (a 'moderate' scenario) represents an approximate 2.4°C increase in global average temperatures (1.7-3.2°C). It assumes moderate mitigation efforts leading to stabilisation of emissions by mid-century and is generally aligned with current policies for emission reduction.
- RCP 8.5 (a 'worst case' / high emissions scenario) represents an approximate 4.3°C increase in global average temperatures (3.2-5.4°C) and assumes continued high emissions with minimal mitigation. This high-end scenario is useful for understanding potential impacts of

current emission trends continue. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

This climate change assessment uses the latest climate change projections standardised and bias corrected for Ireland available through the EPA and the TRANSLATE project (EPA, 2025e).

15.7.4.1.3 Key Findings from Climate Projections

Table 15-7 provides a detailed comparison of baseline and future climatology across a medium (RCP4.5) and high emissions scenario (RCP8.5) up to 2100. Key projected changes include:

- Mean temperature increasing by 1.4°C and 2.6°C by 2100 under RCP4.5 and RCP8.5 respectively;
- Number of frost days (<0°C) reducing by 24 per year under the RCP8.5 scenario by the end of the century; and
- Mid- century rainfall predicted to increase by 50-78 mm annually under RCP4.5 and RCP8.5.

Table 15-7: Site Specific - Future Climate Change Summary of Projections under both RCP scenarios for 2050 period (2040-2070) taken from the EPA Climate Ireland Translate Projections

Climate Hazard	Indicator	Baseline (1976-2005)	RCP4.5 (2041-2070)	RCP4.5 (2071-2100)	RCP8.5 (2041-2070)	RCP8.5 (2071-2100)
Temperature	*Mean temp (°C)*	9.83	10.9 (+1.0)	11.3 (+1.4)	11.3 (+1.5)	12.5 (+2.6)
	Mean Max temp (°C)	13.38	14.3 (+1.0)	14.7 (+1.3)	14.8 (+1.4)	15.9 (+2.5)
	Mean Min temp (°C)	6.27	7.4 (+1.1)	7.8 (+1.5)	7.8 (+1.6)	9.1 (+2.8)
	Average of Daily Max temp (°C)	25.61	27.8 (+2.2)	28.8 (+3.2)	28.3 (+2.7)	29.1 (+3.5)
	Frost Days (Nr.)	29.93	17.4 (-12.5)	13.7 (-16.3)	13.6 (-16.3)	5.9 (-24.0)
Precipitation and Flooding	*Annual precipitation (mm)*	1212	1262 (+50)	1286 (+74)	1289 (+78)	1352 (+140)
	Max 1-day (mm)	35	40 (+5)	43 (+8)	43 (+8)	48 (+13)
Storms and high winds	*Storm Frequency and Average speed*	On Average 8 named storms annually with speeds exceeding 100 km/hr[N.1]	Winter storm frequency is projected to increase, with a possible extension of the storm season. While the intensity of individual storms cannot be accurately projected, storm wind speeds are likely to remain above 100 km/hr.			
	Max gust Speed	84 knots (156 km/hr) [N.2]				
Wildfire	*Number of Wildfires (Qualitative)*	Various	Rising temperatures and prolonged dry spells can cause increased wildfire risk.			
Drought	*Absolute Drought (≥15 days with less than 1 mm)*	Rare	Marginal increase	Increased Likelihood	Marginal increase	Increased Likelihood
Lightning	*Qualitative (Descriptive)*	Occurring during summer periods	This hazard may modestly increase in the future due to more favourable conditions, such as rising temperatures and extended warm periods beyond the traditional summer season			

Note-1: Data from Met Éireann



Note-2: Data from Knock Airport (~63 km from site) between 1996-2021

15.8 Assessment of Effects

15.8.1 Future Baseline Scenario

The 'Future Baseline Scenario' (also known as a 'Do-Nothing Scenario') represents the worst-case outcome for global and Irish GHG reduction. It replicates a global future economic growth and development fuelled by GHG emissions, with minimal to no GHG reduction. This scenario is scientifically represented in SSP5 8.5 (RCP8.5).

With respect to climate, the future baseline scenario will not assist the CAP25 goal of delivering 80% of the national grid electricity by renewable sources and 9 GW of onshore wind capacity by 2030. Producing 80% renewables for the grid will reduce emissions from electricity and will also allow electrification of other sectors such as transport and heat and reduce emissions in these sectors too. Therefore, the future baseline scenario is a lost opportunity for a beneficial effect on climate emissions in the long term.

15.8.2 GHG Assessment

15.8.2.1.1 Construction Phase

The most significant proportion of GHG emissions are anticipated to occur during the construction phase as a result of embodied carbon in construction materials and emissions from construction activities.

The GHG assessment has highlighted the highest construction phase emissions are associated with the building materials used (85%). 61% of material emissions are from the use of concrete, followed by steel (33%) and aggregate (7%). Transport of materials by HGVs emits approximately 472 tCO_2e and construction site energy 486 tCO_2e.

It has been calculated that the total estimated construction phase GHG emissions (excluding those associated with the grid connection route) will be 8,704 tCO_2e (see Table 15-8). GHG emissions associated with the grid connection route are presented separately, in Table 15-9.

Table 15-8: Construction Phase GHG Emissions

GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Predicted GHG Emissions as % of Construction Phase Total	Relevant Sector for Carbon Budget Comparison
Materials	7,401	85%	Industry
Material Transport	472	5%	Transport
Clearance and Demolition	92	1%	Industry
Land Use Change and Vegetation Loss	0	0%	LULUCF
Excavation	61	<1%	Industry
Construction worker travel to site	191	2%	Travel
Construction energy	486	6%	Industry
Total Construction Phase GHG Emissions	**8,704**		
Avoided carbon	332		

15.8.2.1.2 Grid Connection Route

The grid connection route has a marginal impact on GHG emissions from materials and excavation, as set out in Table 15-9.

Table 15-9: GHG emissions associated with the grid connection route

	GCR 1 (tCO_2e)
Materials	57
Excavation	13
Total	**70**
Avoided carbon	42

15.8.2.1.3 Greenhouse Gas Assessment Summary

The GHG emissions from the project as a total cannot be compared against one specific sector 2030 carbon budget. The emissions are broken down into different assessment categories and these must be compared separately to the relevant sectoral emissions budgets which are detailed in Table 15-1 and Table 15-2.

In Table 15-10, GHG emissions have been compared against the carbon budget for the industry, electricity and transport sectors in 2030 (DECC, 2024), against Ireland's total GHG emissions in 2025, and against Ireland's EU 2030 target of a 42% reduction in non-ETS sector emissions based on 2005 levels (27.7 Mt CO_2e) (set out in Regulation EU 2018/842).

Table 15-10 demonstrates the estimated total GHG emissions, which have been annualised over the 35-year project lifespan, are a small fraction of the national target and sectoral budgets.

Table 15-10: Estimated Construction Phase GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Annualised Development GHG Emissions (tCO_2e)		% of Relevant Target/Budget
Ireland's 2025 Total GHG Emissions (existing baseline)	55,163,780	Total GHG Emissions	251	0.0005%
Non-ETS 2030 Target	27,721,670	Total GHG Emissions		0.0009%
2030 Sectoral Budget (Industry Sector)	4,000,000	Total Industry Emissions	218	0.0054%
2030 Sectoral Budget (Transport Sector)	6,000,000	Total Transport Emissions	19	0.0003%
2030 Sectoral Budget (Electricity Sector)	3,000,000	Total Electricity Emissions	14	0.0005%

15.8.2.1.4 Operational Phase

During the operational phase there will be no GHG emissions from the operation of the wind turbines. The estimated 58.5 MW from the turbines will generate a minimum of 149,638 MWh of renewable energy annually, assuming a 29.2% capacity factor. This energy production will displace electricity which otherwise would have been produced from fossil fuels and therefore will be a net benefit in terms of greenhouse gas emissions.

The total annual GHG emission savings of the proposed project will amount to approximately 34,637 tCO_2e once the GHG emissions from the construction phase (as outlined in Section 15.8.2) have been considered.

The estimated total GHG emissions savings for the 58.5 MW scenario, when annualised over the 35-year proposed project lifespan, are equivalent to 0.1% of Ireland's total GHG emissions in 2025 (and 0.5% of GHG emissions from equivalent fossil fuel energy production), 1.2% of the total carbon budget for the electricity sector in 2030 and 0.3% of Ireland's ETS 2030 emissions

target (Government of Ireland, 2025) i.e. the proposed project has the potential to reduce Ireland's CO_2e emissions by these percentages. See Appendix 15-1.

Table 15-11: Estimated Operational Phase Project GHG Savings

Development Emissions & Savings	tonnes CO_2e	Baseline / Target	Relevant tonnes CO_2e	% of Baseline / Relevant Target
Annual Equivalent GHG Emissions from Power Plant Producing 223 GWh	34,888			
Annualised GHG Emissions due to Construction Phase (averaged over lifespan)	251			
Total Annual Savings Due to the proposed project (averaged over lifespan)	34,637	Ireland's Total GHG Emissions 2024 (existing baseline)	55,163,780	0.1%
		Ireland's GHG Emissions from Fossil Fuel Energy Production 2024 (existing baseline)	7,157,440	0.5%
		ETS 2030 Target (42% of 2005 ETS Level)	12,953,240	0.3%
		2030 Sectoral Budget (Electricity Sector)	3,000,000	1.2%

The proposed project will assist in the CAP25 goal of producing 80% electricity from renewables for the grid and 9 GW of onshore wind capacity, which is one of the Key Targets identified in Section 11 of CAP25. The proposed project will constitute 0.06 GW of that capacity and will abate Ireland's greenhouse gas emissions by between 34,637 tCO_2e for every year of operation.

15.8.2.1.5 Greenhouse Gas Assessment Significance of Effects

The TII and ISEP guidance states that the following two factors should be considered when determining significance:

- 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.

Therefore, prior to mitigation, any impact on climate as a result of GHG emissions arising from the construction of the proposed project is considered **significant**.

The operational phase of the proposed project positively contributes to Ireland's GHG trajectory to net zero by 2050. In accordance with the EPA EIAR Guidelines (2022) the operational phase equates to an impact that is **direct** due to its presence, that is **long-term** as a result of the estimated lifetime of the infrastructure, **positive** due to the displacement of fossil

fuels through the production of renewable electricity and **slight** based on its overall contribution to global climate mitigation. In EIA terms, the effect of the proposed project is **not significant**.

15.8.3 Climate Change Risk Assessment

15.8.3.1.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 15.6.2. However, consideration has been given to the proposed project's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 15.9.

- Flood risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding affecting unfinished structures or access roads/pavement.
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather potentially affecting setting concrete or cement, dust suppression and construction worker health and safety.
- Reduced temperatures resulting in ice or snow potentially affecting setting concrete or cement, landscaping and construction worker health and safety.
- Major storm damage, including wind damage potentially affecting landscaping, stored materials, vertical infrastructure and construction worker health and safety.

15.8.3.1.2 Operational Phase

To determine the vulnerability of the proposed project to climate change the sensitivity and exposure of the project to various climate hazards must first be determined. Table 15-12 presents the initial qualitative climate hazards screening relevant to the proposed project.

Table 15-12: Climate Hazard Screening

Climate-related Hazard	Hazard Screening Rationale	Screening
Extreme Heat temperatures	High temperatures are a key consideration for both construction and long-term operation of the proposed project. Heat and thermal expansion can damage materials, road surfaces, and auxiliary systems such as electrical, while also affecting the lifecycle of assets, therefore it is screened into this assessment.	Screen in
Extreme Cold Temperature	Snow and ice events pose significant risks to health, safety, and site operations. Road access may be disrupted, and low temperatures can affect assets such as fuel tankers, workers, and infrastructure. Freeze-thaw cycles may cause cracking in concrete and road surfaces, requiring snow clearance and ice management, therefore it is screened into this assessment.	Screen in
High precipitation and pluvial flooding	A site-specific Flood Risk Assessment (FRA) (Appendix 9-2) prepared by Tobin, indicates that the study area is at risk of pluvial flooding. Surface water remains a key vulnerability for any proposed project during both construction and operational phases due to the sensitivity of construction	Screen in

Climate-related Hazard	Hazard Screening Rationale	Screening
	materials, site access, and site assets to water exposure, therefore it is screened into this assessment.	
Fluvial flooding	The FRA, prepared by Tobin reports the overall fluvial flood risk to the proposed project is considered to be low to negligible. Both the wind farm site and the proposed 110 kV substation remain outside the 1% AEP and 0.1% AEP fluvial flood extents, including under the Mid-Range Future Scenario (climate change allowance). The GCR infrastructure, although potentially located within areas liable to flooding, is appropriately designed (underground and watertight) and is therefore resilient to fluvial flood conditions. Fluvial flooding is therefore scoped out.	Screen out
Drought	Droughts have occurred across Ireland, previously impacting water supply. Future reductions in availability would not directly impact the project and its operation, therefore it is screened out of this assessment.	Screen out
Wildfire	The area surrounding the site is primarily agricultural land which has low vulnerability to wildfire, therefore it is screened out of this assessment.	Screen out
High winds and storms	Turbines, substation and other assets of the proposed project may be exposed to high winds. Historically, Ireland has experienced several notable storm events including Storm Éowyn (2025) and Storm Darragh (2024), which caused widespread damage across Ireland. These storms often bring heavy rainfall and flood warnings, increasing overall risk, therefore it is screened into this assessment.	Screen in
Fog	Fog is not considered a significant hazard for this project, as it does not involve transport, aviation, or activities requiring high visibility, therefore it is screened out of this assessment. Lighting of the turbines will be in place to ensure no impacts with low flying aviation.	Screen out
Lightning	The proposed design is elevated and includes electrically charged components such as a substation, making it susceptible to lightning strikes, therefore it is screened into this assessment.	Screen in
Landslides and Subsidence	The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) was reviewed to determine a	Screen out

Climate-related Hazard	Hazard Screening Rationale	Screening
	low risk from landslides at the proposed project location, therefore it is screened out of this assessment.	
Sea level rise and coastal flooding	The site of the project is not a coastal location (27 km), therefore it is screened out of this assessment.	Screen out

15.8.3.1.3 Climate Vulnerability Assessment

The sensitivity and exposure of the project to the screened in climate hazards must first be determined to then determine the vulnerability of the proposed project to climate change. Pluvial flooding, extreme heat, extreme cold, extreme wind and lightning, have been considered as climate hazards in the context of the proposed project. The results of the vulnerability assessment are detailed in Table 15-13.

Table 15-13: Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Pluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	2 (Medium)	2 (Low)
Lightning	1 (Low)	1 (Low)	1 (Low)

It was concluded that, with design and management mitigation in place, the proposed project does not have any significant vulnerabilities to the identified climate hazards, as described in the below sections.

Pluvial Flooding

As set out in the FRA by TOBIN, surface water arising on the proposed project site will be managed by a dedicated stormwater drainage system in accordance with Sustainable Drainage Systems (SuDS) principles, limiting discharge from the site to greenfield runoff rates.

The landscaping and topography of the developed site will provide safe exceedance flow paths and prevent surface water ponding to minimise residual risks associated with an extreme flood event or a scenario where the stormwater drainage system becomes blocked.

Based on OPW flood maps, there are no past flood events in the vicinity of the study area or substation.

Therefore, the risk of pluvial flooding to the proposed development is considered low.

Extreme Wind

In relation to extreme winds, the turbines, overhead line interface masts and other structures are designed to the appropriate standards to account for the relevant wind loadings. Auto shut off technology is installed within the turbines if wind speed is too high and has the potential to damage the turbines.

With future climate change storms are likely to become more extreme, with storms in RCP8.5 likely to be even more extreme than in RCP4.5. Given the nature of their use, the turbines are designed to be placed in high wind environments and therefore significant research has gone into their ability to withstand extreme wind loadings. The grid connection route will be buried underground so protected from extreme winds.

Lightning

Wind turbines are inherently susceptible to lightning strikes; therefore, they are designed with integrated protection systems. Mitigation measures have been incorporated to address this vulnerability and the potential increase in electrical storms due to future climate change. The project design includes an 18 m lightning protection mast for the substation and auxiliary assets, while each turbine is equipped with lightning protection to safeguard generators and associated systems. Based on the submitted design specifications, these measures are considered sufficient to reduce vulnerability, and the overall risk of lightning impact is deemed low.

Extreme Temperatures (Heat & Cold)

Extreme temperatures, both hot and cold, can affect building materials and infrastructure; however, the project will use materials that comply with current standards and are designed to withstand projected climate extremes. Cold events are expected to decline, reducing the risk of cracking from freeze thaw weathering of road surfaces and deterioration of auxiliary systems and infrastructure. Potential heat-related impacts such as road surface softening during heatwaves and deterioration of electrical equipment and short circuiting are also unlikely as projected extremes are not expected to reach these thresholds. Regular monitoring should be carried out to protect the longevity of the proposed project.

The grid connection and additional sensitive electrical systems will be buried or not exposed for thermal protection, and substation cooling systems will be designed for RCP4.5 and RCP8.5 scenarios with capacity for future upgrades. Overall, extreme temperatures are not considered a significant risk.

Summary

Overall, the proposed project has, at most, low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

15.8.3.1.4 Climate Change Risk Assessment Significance of Effects

In the absence of design mitigation, there is a low risk to the proposed project as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed project as a result of climate change are **direct** as climate extremes have a direct physical effect on buildings and infrastructure, **long-term** due to the response times of the climate in relation to changes in anthropogenic emissions, **adverse** as climate extremes have been shown to damage or adversely affect infrastructure, and **not significant** due

to the low vulnerability of the proposed project to the effects of climate change, which is overall **not- significant** in EIA terms.

15.9 Mitigation Measures

15.9.1 Greenhouse Gas Assessment

15.9.1.1.1 Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate and are further detailed in the CEMP (Appendix 2-2):

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled;
- The replacement, where feasible, of standard concrete containing Portland cement concrete with an alternative concrete mix with lower associated embodied carbon, as per the Climate Action Plan. This will be a minimum of 30% GGBS replacement, or concrete with equivalent or lower associated embodied carbon;
- Procurement contracts will ensure that material choices with lower associated embodied carbon relative to standard construction materials are considered favourable during tender;
- Materials will be reused on site where possible;
- Prevention of on-site or delivery vehicles from leaving engines idling, when not in use, even over short periods;
- Ensure all plant and machinery are well maintained and inspected regularly;
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the GHG emissions associated with the site;
- Where practicable, opportunities for materials reuse will be incorporated within the extent of the proposed project including the use of reclaimed asphalt and recycled aggregate, which will reduce the virgin material needs;
- Sourcing materials (aggregates, concrete and steel) locally where possible to reduce transport related CO2 emissions;
- Bare soil areas will be minimised in extent and duration. Temporary soil stockpiles will be covered or seeded to minimise run-off. All landscape areas, including temporary compound areas, will be reinstated;
- Use of EV's during construction, where feasible;
- Use of HVO during construction, where feasible;
- Use of mains electricity or batteries during construction of the proposed 110 kV substation;
- Backloading of HGVs to reduce transport emissions; and
- Use of geogrids in paved areas.

15.9.1.1.2 Operational Phase

During the operational phase of the proposed project, the works onsite will be limited to maintenance associated with the wind farm. Although the intensity of activity will be only a small fraction of the construction phase, all employees and contractors that are on site will ensure

that machinery used is properly maintained and is switched off when not in use to avoid unnecessary exhaust emissions from maintenance vehicles and plant. No other mitigation is proposed.

15.9.2 Climate Change Risk Assessment

15.9.2.1.1 Embedded Mitigation

Several measures have been adopted as part of the project design, primarily in terms of reducing risk to the project from climate change hazards. These have been discussed in detail previously in Section 0, and are summarised as follows:

- Dedicated stormwater drainage systems will be installed in accordance with Sustainable Drainage Systems (SuDS) principles, limiting discharge from the site to greenfield runoff rates.
- The landscaping and topography of the developed site will provide safe exceedance flow paths and prevent surface water ponding.
- Lightning protection for the turbines will be provided for, following relevant standards.
- The turbines shall be designed to the appropriate standards to account for the high wind loadings.
- High quality, durable building materials will be selected for the proposed project to reduce their sensitivity to extreme temperatures.

However, a project's climate resilience benefits from review of climate hazards and management of their impacts during the detailed design, construction and operation. The proposed project will be constructed having taken the most up to date Eurocodes, design practices and climate data into account prior to maximise resilience of the project against climate change hazards.

15.9.2.1.2 Construction Phase

In terms of impact on the proposed project due to climate change, during construction the Contractor will mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will 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, and the Contractor will ensure that these are complied with. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will mitigate against the effects of lightning through site risk assessments and method statements.

15.9.2.1.3 Operational Phase

During the operational phase of the proposed project, the works onsite will be limited to maintenance associated with the wind farm. Although the intensity of activity will be only a small fraction of the construction phase, all employees and contractors that are on site will ensure that machinery is used within safe operating temperatures and under safe conditions.

15.10 Residual Effects

15.10.1 GHG Effects

TII reference the ISEP guidance (2022) which states 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".

15.10.1.1.1 Construction phase

As set out in Table 15-10, during the construction phases, the proposed project will negatively impeded Ireland's trajectory to achieving net zero by 2050 as GHG emissions produced during the construction phase will contribute a small fraction towards the national and sectoral budgets. The proposed project will minimise its impacts through design and management measures (see Section 15.9.1.1.1). The level of mitigation described in Section 15.9 surpasses best-practice and minimum regulatory requirement. This has been taken into account when determining the residual significance of the proposed project's GHG emissions against ISEP Guidance (2026).

Based on the above reasoning, in accordance with the EPA Guidelines (EPA, 2022), the above criteria equates to an impact of GHG emissions during the construction phase of a **direct** impact due to its presence, that is **long-term** as a result of the atmospheric lifetime of GHG emissions, **adverse** due to the emission of GHGs and **slight** based on the small contribution of GHG emissions to Ireland's national trajectory to net zero. Overall, the impact on the climate from the construction phase is considered to be **not significant** in EIA terms.

15.10.1.1.2 Operational phase

As set out in Table 15-11, the proposed project will positively contribute towards Ireland's trajectory to achieving net zero by 2050 as the proposed project will displace approximately 34,637 tCO_2e annually from fossil fuel energy generation across its lifespan. Based on TII guidance (see Table 15-3:), the impact is beneficial as:

- 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.

In accordance with the EPA Guidelines (EPA, 2022), the above criteria equates to an impact of GHG emissions that is **direct** due to its presence, that is **long-term** as a result of the estimated lifetime of the infrastructure, **positive** due to the displacement of fossil fuels through the production of renewable electricity and **slight** based on its overall contribution to global climate mitigation. In EIA terms, the effect of the proposed project is **not significant**.

15.10.1.1.3 Net GHG Significance of Effect

ISEP guidance (2026) states "*Significance of each project lifecycle stage should be assessed (and where applicable mitigated) before reaching any overall lifecycle net effect conclusions."* Although the construction phases have an adverse, not significant impact on the climate, the

operational phase has a more substantial positive, not significant impact on the climate. As expressed in Section 15.6.1.1.3 the carbon payback for the wind turbines is 6.1 months therefore across the 35- year lifespan of the turbines, the positive impact far outweighs the adverse.

In accordance with the EPA Guidelines (EPA, 2022), the above criteria equates to an impact of GHG emissions that is **direct** due to its presence, that is **long-term** as a result of the estimated lifetime of the infrastructure, **positive** due to the displacement of fossil fuels through the production of renewable electricity and **slight** based on its overall contribution to global climate mitigation. In EIA terms, the effect of the proposed project is **not significant**.

15.10.2 Climate Change Risk Assessment Residual Effects

With design mitigation in place, there are no residual risks to the proposed project as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed project as a result of climate change are **direct** as climate extremes have a direct physical effect on infrastructure, **long-term** due to the response times of the climate in relation to changes in anthropogenic emissions, **adverse** as climate extremes have been shown to damage or adversely affect infrastructure, and **imperceptible** due to the low vulnerability of the proposed project to the effects of climate change once mitigation measures have been embedded, which is overall **not- significant** in EIA terms.

Table 15-14: Summary of Effects Post Mitigation

Likely Significant Effect in accordance with EPA Terminology	Quality	Significance	Extent	Probability	Duration	Type
GHG emissions and savings from construction, operational phases (net effect)	Positive	Not significant	Global	Likely	Long-term	Direct
Climate change and related vulnerability of the proposed project	Adverse	Imperceptible	Local	Likely	Long-term	Direct

15.11 CUMULATIVE EFFECTS

In accordance with guidance from the ISEP (ISEP, 2026) the climate is not constrained by project, regional, or national boundaries and therefore the GHGA has been presented in the context of the national and sectoral carbon budgets for the whole of Ireland and the ability of the proposed project to assist or impede the national relevant targets. Given the contribution of such targets to the global efforts to reduce the impact of society upon the climate the assessment is considered to be inherently cumulative.

As per the above, the cumulative impact of the proposed project in relation to GHG emissions is considered **direct, long-term, positive** and **slight**, which is overall **not- significant** in EIA terms.

15.12 Transboundary Effects

As discussed in Section 15.11, the impact of GHG emissions on climate are not constrained by national boundaries. The effects identified during the construction phase in Section 15.8.2.1.1 will adversely impact the global climate due to the release of GHG emissions. Conversely, the effects identified during the operational phase in Section 0 will positively impact the global climate by displacing fossil fuels for power generation and thereby reducing global GHG emissions. The GHG emission savings during the operational phase, far outweigh the emissions from the construction phase as discussed in Section 15.8.2.1.5.

15.13 Conclusion

This chapter of the EIAR has assessed the potential environmental effects on climate, focusing on:

- The potential greenhouse gas emissions during the construction and operational phases of the project;
- The offsetting of GHG emissions through renewable electricity generation, which will contribute to reducing Ireland's reliance on fossil fuels;
- The vulnerability of the project to climate change, including considerations for increased rainfall and other projected climate impacts; and
- The long-term benefits of the project in helping Ireland achieve its Climate Action Plan targets and the National Climate Objective of Net Zero by 2050.

Overall, there are no significant effects on climate as a result of the proposed project, and no significant effects on the proposed project as a result of climate change hazards.

15.13.1 Greenhouse Gas Assessment

The impact of GHG emissions during the construction and operational phases on climate was assessed in line with TII guidance PE-ENV-01104 (TII, 2022) and ISEP GHG guidance (ISEP, 2026), which states that the significance of the impact of GHG emissions was based on the proposed project's net impact over its lifetime.

The GHGA considered the GHG emissions arising from embodied carbon in materials and construction activities, and the carbon savings from the operation of the proposed project.

The estimated export capacity of 58.5 MW from the proposed project will generate approximately 150,000 MWh annually, which will amount to annual GHG emission savings of approximately 34,637 tCO_2e at the 2025 carbon intensity, which is equivalent to 1.2% of the total carbon budget for the electricity sector in 2030 (Government of Ireland, 2025).

The proposed project will assist in the CAP25 goal of producing up to 80% renewables for the grid and the key actions of installing at least 9 GW of onshore wind energy. CAP25 states that "*rapid and significant reductions in GHG emissions are required if we are to meet the 2015 Paris Agreement Goals*". The proposed project, through its GHG emissions savings potential, will make a contribution both annually and over its lifetime to Ireland meeting its legal obligations under EU climate law to achieve the net carbon zero target for 2050. Additionally, Ireland's carbon budget for electricity between 2026 and 2030 of 20 Mt CO_2e total cannot be achieved unless there is early delivery of a significant volume of the installed onshore wind capacity targets required by CAP25. The proposed project should therefore be considered an essential

installation in aiding Ireland's legal climate compliance and combatting the national climate emergency.

The impact of GHG emissions from the proposed project aligns with Ireland's GHG trajectory to net zero by 2050. Once mitigation measures have been considered, this equates to a **direct, positive, long-term** and **slight** effect on climate, according to the EPA guidelines (EPA, 2022), which is **not- significant** in EIA terms.

In summary there are no likely significant effects on climate as a result of the construction and operational phases of the proposed project.

15.13.2 Climate Change Risk Assessment

The vulnerability of the proposed project to climate change was assessed by the CCRA, in line with EPA National Climate Change Risk Assessment Guidance (2025), TII guidance PE-ENV-01104 (TII, 2022), European Commission *Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021–2027* (European Commission, 2021a) and ISEP guidance *Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition)* (ISEP, 2020a). This involved an analysis of the sensitivity and exposure of the proposed project to climate hazards which together provide a measure of vulnerability.

Mitigation measures for sensitive elements, such as flood protection and SuDs, wind turbine design and control during high winds and lightning protection measures have been incorporated into the design and the vulnerability analysis of the proposed project.

Having taken these into account, this results in a worst-case, low vulnerability to climate change hazards. In accordance with the EPA EIAR Guidelines (2022), and with the design mitigation in place, the significance of effect on the proposed project as a result of climate change are **direct, adverse, long-term** and **imperceptible**, which is **not- significant** in EIA terms.

In summary there are no likely significant effects on the proposed project as a result of climate change hazards.

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