12. CLIMATE

12.1 INTRODUCTION

This chapter comprises an assessment of the likely significant effects on climate associated with the proposed project, which comprises of 14 wind turbines. 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, the grid connection route, turbine delivery haul route and an estimated energy production from the turbines based on a range of turbine options.

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.

12.2 STATEMENT OF AUTHORITY

This chapter was prepared by Sarah Berry, a Principal Climate Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc degree in Physical Geography from the University of Leeds. She has 9 years' experience in the climate change and sustainability sectors, with expertise in greenhouse gas accounting and verification. She also has experience in greenhouse gas permitting. Her experience includes conducting strategic sector-specific GHG audits across a range of industries including data centres, industrial facilities, hospitals, manufacturing, power stations, wastewater treatment works and airports.

This chapter was also prepared by Caolán Leneghan, Senior Climate Change Consultant at AWN Consulting. Caolán holds degrees in Geography and International Development (Maynooth University) and Disaster Risk Management & Climate Change Adaptation (Lund University, Sweden). With over five years' experience, he specialises in climate risk assessment, adaptation strategy, and advisory services across sectors including infrastructure (including residential), transport, energy, urban planning, and water. He has also supported international development and climate resilience advising The World Bank, MDBs and UK government on climate adaptation and delivering guidance for assessment.

This chapter was reviewed by Dr. Jovanna Arndt, a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc. in Environmental Science and a Ph.D. in Atmospheric Chemistry from University College Cork. She is an Associate Member of both the Institute of Air Quality Management and the Institute of Environmental Sciences. She has been specialising in the area of air quality and climate over 8 years and has prepared air quality and climate assessments for inclusion within EIARs for residential developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref:

DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), commercial and industrial developments by Dublin Airport Authority, Zoetis, Ipsen, Merck Millipore, Greener Ideas Limited and Abbvie, as well as renewable energy developments such as Codling Wind Park and the Cúil Na Móna Anaerobic Digestion Facility. She also specialises in assessing air quality impacts using air dispersion modelling of transportation schemes such as BusConnects Dublin, major Highways England Road schemes and major rail infrastructure in the form of High Speed 2 (HS2 in the UK). She has prepared air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Microsoft, Greener Ideas Limited, Merck Millipore, Lilly Limerick, Chemifloc, Takeda, Kingspan and Kilshane Energy. She has also provided Air Quality Action Plan (AQAP) and Air Quality Management Area (AQMA) support to several UK councils and assessed the air quality impacts of potential Clean Air Zones in the UK.

12.3 Legislation, Policy and Guidance

12.3.1 International Legislation & Policy

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 then interpreted through European and domestic policy instruments that clarify aspects, objectives, targets and requirements described in the legislation.

12.3.1.1Legislation

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".

12.3.1.2Policy

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 5-year carbon budget periods, shown in Table 12-1, and the Sectoral Emissions Ceilings, shown in Table 12-2, as required by the Climate Act.

Table 12-1: 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 12-2: CAP25 Sectoral Emission Ceilings for 2030

Sector	Baseline (Mt CO_2e)	Carbon Budgets (Mt CO_2e)		2030 Emissions (Mt CO_2e)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
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 9 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 Development:

- 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.

12.3.1.2.1 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 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.

12.3.1.3Local Policy

The Leitrim County Council (LCC) Climate Action Plan 2024–2029 (LCC 2024) sets out strategies to reduce greenhouse gas emissions and adapt to climate change, aligned with Ireland's National Climate Objective for a climate-neutral, sustainable economy by 2050. The plan aims to achieve a 51% reduction in greenhouse gas emissions by 2030 and focuses on six key themes:

- Transport.
- Greener Economy.
- Agriculture & Land Use.
- Energy & Buildings.
- Biodiversity & Nature-Based Solutions.
- Circular Economy & Resource Management.

Renewable energy and decarbonisation objectives are addressed through actions such as:

- SR23: Promote the development of renewable energy projects in suitable locations, ensuring compliance with environmental and landscape considerations.
- SR24: Collaborate with external stakeholders, including semi-state bodies, communities, and private developers, to advance renewable energy deployment and agricultural emissions reductions, while safeguarding biodiversity and environmental integrity.

The Leitrim County Development Plan 2023- 2029 (RSES Regional Policy Objectives – climate change and renewable energy infrastructure in order to "position the region to avail of the emerging global market in renewable energy".

12.3.1.4Guidance

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 below:

- 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); and
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021).

12.4 METHODS

12.4.1 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 12.6.1).

12.4.1.1Construction Phase

12.4.1.1.1 GHG Assessment – TII Carbon Tool

The GHG assessment 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. It has been

acknowledged that as part of the EIAR Scoping Report Request, Leitrim County Council suggested the use of an alternative GHG emission calculation tool (UK Environment Agency's Carbon Calculator for Construction Activities) to quantify GHG emissions. AWN has determined that the TII Carbon Tool (2025) provides a robust methodology as it uses Ireland specific emissions factors and relevant, specific material options as well as facilitating the calculation of GHG emissions through construction, operation and decommissioning. 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 all materials, construction activities and construction worker travel for the proposed project. Activities associated with the grid connection route and transport via the turbine delivery route have also been calculated through this method. 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 (i.e. tree felling and peat removal);
- Construction materials;
- Construction traffic (HGV movements for material deliveries, construction staff movements, transport for TDR); and
- Construction works (including excavations, fuel usage for site and grid connection route).

Information on the above elements were provided by the project teams for input into the carbon tool.

Forests are an important part of the global carbon cycle and effective management at a regional scale can help to reduce GHG concentrations (UK Forestry Commission, 2012). Trees have the ability to sequester carbon with the peak CO_2 uptake rate for tree stands of the order of 5–20 tonnes of CO_2/hectare/year with CO_2 uptake rates declining before stand maturity. The TII Carbon Tool includes an assessment for forestry loss and the replanting of forests stands. The Proposed Development includes the felling of 63.3ha of commercial forest with an offsite replanting programme.

Precautionary estimates have been used in this assessment where detailed information was not available regarding proposed construction materials and exact methodologies.

12.4.1.1.2 Turbine Manufacture Lifecycle Assessment

The GHG emissions associated with the manufacture of the wind turbines themselves have been considered in the GHG assessment. Due to the flexibility sought regarding the range of design parameters associated with the wind turbines for the proposed project the make and manufacturer of the turbines to be installed has not yet been decided at this stage of the project and will be decided post consent should permission be granted. As a result, indicative information from various wind turbine manufacturers (based on experience of similar projects and publicly available information from manufacturers such as Nordex and Vestas) has been reviewed.

These LCAs are produced by the manufacturer at one specific site for specific turbine models, and consider variables such as project lifespan and local wind conditions. An LCA is not produced by the manufacturer on a project by project basis i.e. not for this proposed project. The GHG emissions are typically presented as an overall value, and detailed information for each stage is not provided. It is therefore not possible to extract only the relevant elements (such as materials for the turbines) for the proposed project and incorporate them quantitatively into this assessment. However, LCAs do provide an indication of the payback period for the turbines, which ranges from 5-8 months based on the LCAs reviewed. The proposed project is therefore expected to offset the GHG emissions associated with the turbine manufacture in a similar time frame. This has been considered qualitatively as part of GHG assessment for the proposed project.

12.4.1.2Operational 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, 2024)) has been calculated. The GHG emissions associated with an equivalent fossil fuel plant generating 222,592 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 relatively low volume of vehicles required for maintenance activities during operation (see Chapter 14 for more detail), emissions from operational vehicles have been scoped out of this assessment.

12.4.1.3Decommissioning Stage

Vehicles related to the decommissioning phase will give rise to CO_2 emissions. It is not predicted that this development will involve the use of a significant number of vehicles during the decommissioning phase. Therefore, emissions from vehicular traffic and 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 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 LCAs reviewed and discussed in Section 12.4.1.1.2. As per these LCAs, the majority of the metal components that are primarily mono-material (e.g. gears, transformers, tower sections, etc.) will be recycled. It is expected that the reinforced concrete foundation bases will remain in-situ. Decommissioning has been considered as part of the turbine LCAs and payback periods (discussed in Section 12.4.1.1.2), 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.

12.4.1.4Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document *entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document* (TII, 2022) outlines a recommended approach for determining the significance of both the construction, operational and decommissioning phases of a development, which has been applied to this assessment.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022) is based on the ISEP GHG guidance (ISEP, 2026) which is broadly consistent with the terminology contained within Figure 3.4 of the EPA's (2022) *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'*.

The ISEP GHG guidance (ISEP, 2026) sets out the following principles for significance:

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

The ISEP GHG guidance states that the crux of significance regarding impact on climate is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050. Only projects that actively reverse (rather than only reduce) the risk of severe climate change can be judged as having a beneficial effect.

TII states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact (TII, 2022). Significance is determined using the criteria outlined in Table 12-3 (derived from Table 6.7 of PE-ENV-01104 (TII, 2022)) along with consideration of the following two factors:

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

The significance of the effect of GHG emissions on climate is assessed for the total GHG emissions across all project stages.

Table 12-3: Greenhouse Gas Assessment (GHGA) Significance Criteria copied from TII Guidance (2022)

Effects	Significance Level Description	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 have not fully complied with local or national policies; and Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	The project's GHG impacts are mitigated through 'good practice' measures. The project has complied with existing and emerging policy requirements; and Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	The project's GHG impacts are mitigated beyond design standards. The project has gone well beyond existing and emerging policy requirements; and Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. The project has gone well beyond existing and emerging policy requirements; and Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed project (TII, 2022). The approach is based on comparing the net proposed project GHG emissions to the relevant carbon budgets (Government of Ireland, 2025). The relevant sector budgets are for Electricity, Transport, Waste and Industry. The 2030 sectoral emissions ceilings and reduction requirements relative to the 2018 baseline are detailed in Table 12-2.

12.4.2 Climate Change Risk Assessment

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

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development-by-development 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 based on the proposed site location Table 12-11. This is a qualitative screening which intends to only proceed with relevant hazards (e.g., sea level rise is not an applicable hazard to inland areas or wildfire is not considered a hazard in an urban location). Following this relevant hazard will continue to be assessed on their exposure under future climate change.

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

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

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

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

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

12.4.2.1Significance Criteria for CCRA

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

hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 12-4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022) 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 development 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. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022) if a detailed CCRA is required.

Table 12-4: 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 0, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction or decommissioning phase was not required, best practice mitigation against climate hazards is still proposed as outlined in Section 12.8.2.

12.5 Difficulties Encountered

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

For the purposes of this GHG assessment, data assumptions have been made and are set out in Table 12-5.

Table 12-5: GHGA Assumptions

Phase	GHG Assessment Category	Limitations and assumptions
Construction	**Materials**	Concrete, aggregates, steel, quantities provided by the Design Team and required for main project elements such as turbine foundations, hardstanding areas and substation
	Material transport	Offsite truck deliveries provided by Design Team. Assume all HGV.
	Clearance and demolition	Site preparation and clearance
	Land use change and vegetation loss	Removal of mixed forest
	Excavation	Excavation
	Construction energy	In lieu of primary data, proxy data from a windfarm located elsewhere in Irelands has been used. Construction period has been prorated as appropriate.
	Construction worker travel to site	Assumed average car and 30km travel distance
	Construction waste disposal	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 guidance- associated GHG emissions are predicted to be a small proportion of total emissions
	Construction water	Scoped out in line with ISEP guidance- associated GHG emissions are predicted to be a small proportion of total emissions
Operation	**Operational energy**	See Section 0 Operational Phase GHG Assessment
	Operational transport	No predicted significant effect due to the relatively low volume of vehicles required for maintenance activities during operation.
	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 reused on site which would otherwise end up in landfill (50km roundtrip via 20t capacity HGV)

12.6 EXISTING 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.

12.6.1 Current GHGA Baseline

Data published in July 2025 (EPA, 2025a), indicates that Ireland exceeded, without the use of flexibilities, its 2024 annual limit set under EU's Effort Sharing Decision (ESD) (406/2009/EC) by 1.03 Mt CO_2e. However, the 2024 emissions represent the second consecutive year in which Ireland's emission were below (-4.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-1.1%) and ESR (Effort Sharing Regulation) emissions decreased (-2.2%). Ireland's target is an emission reduction of 626 kt of CO_2e by 2030 on an average baseline of 2016 to 2018.

The EPA estimate that 2024 total national GHG emissions, excluding LULUCF, have decreased by 2.0% on 2023 levels to 53.82 Mt CO_2e, with a 0.7 Mt CO_2e (-8.9%) reduction in electricity industries alone. This was driven by a 39.7% share of energy from renewables in 2024 and the complete phase-out of peat for electricity generation. Manufacturing combustion and industrial processes decreased by 4.6% to 6.0 Mt CO_2e in 2024 due to declines in fossil fuel usage. The sector with the highest emissions in 2024 was agriculture at 38% of the total, followed by transport at 20.8%. For 2024, total national emissions (including LULUCF) were 57.65 Mt CO_2e (EPA, 2025a, shown in (Table 12-6).

The current estimates of National greenhouse gas emissions (including LULUCF) in 2024 are 12.0% below 2018, well off the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021- 2024 Ireland has used 79% (186 Mt CO_2e) of the 295 Mt CO_2e Carbon

Budget for the five-year period 2021-2025. This leaves 21% of the budget available for 2025, requiring a substantial 17.5% annual emissions reduction for 2025 to stay within budget.

Table 12-6: Trends in Total National GHG Emissions 2022 - 2024

Sector [Note 1]	2022	2023	2024	Total Budget (Mt CO_2e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2023 to 2024 (%)
Electricity	9.69	7.57	6.95	40	85.27	-8.26
Transport	11.76	11.79	11.65	54	85.72	-1.18
Buildings (Residential)	5.75	5.35	5.61	29	81.33	+4.94
Buildings (Commercial and Public)	1.42	1.38	1.49	7	82.03	+7.92
Industry	6.65	6.30	6.01	30	86.84	-4.58
Agriculture	21.79	20.75	20.41	106	80.10	-1.67
Other [Note 2]	1.79	1.70	1.63	9	76.44	-4.01
LULUCF	3.66	3.89	3.89	-	-	-
Total including LULUCF	**62.52**	**58.74**	**57.65**	**295**	**82.48**	**-1.86**

Note 1 Reproduced from latest emissions data from the EPA website (EPA 2025a)

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)

12.6.2 Future GHGA Baseline

The future GHG baseline is considered in relation of the ability of the Proposed Development to contribute positively or negatively to the ability of Ireland to meet the binding commitment as part of the Climate Act for carbon neutrality by 2050.

The targets for 2030 and 2050 are described in CAP24 and CAP25 as required by the Climate Act that codified the GHG reductions required by EU Regulation 2018/842 amended by EU Regulation 2023/857 put in place to enable European Member States to meet their obligations under the Paris Agreement. The future baseline is determined by Ireland being able to meet its requirements under these regulations.

Ireland's Greenhouse Gas Emissions Projections 2024-2055 (EPA 2025) summarises 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 10% 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 22% by 2030, still short of the 42% reduction target.

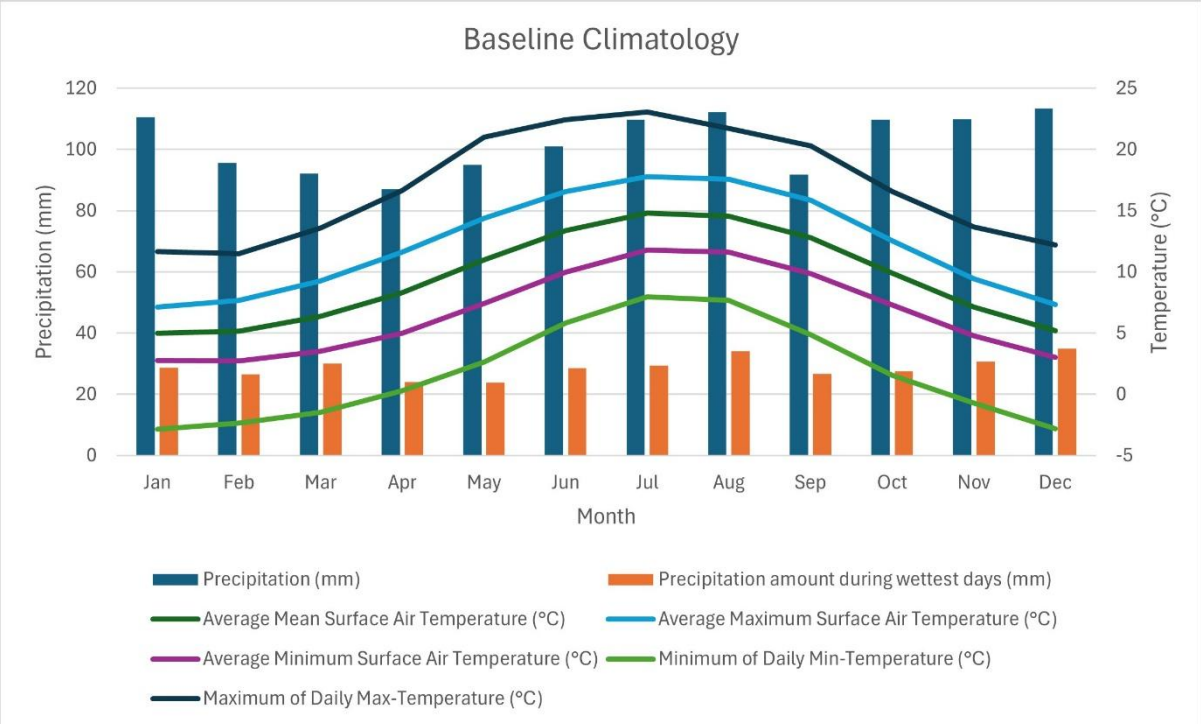
12.6.3 Current CCRA Baseline

The region of the proposed development 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 (ECMWF, 2023) which includes observed data from local meteorological weather stations across Ireland from 1950-2023. This data is reanalysed to model a complete picture of Irelands historical climate. 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 the county of Leitrim.

Figure 12-1 shows the climatology for the 30-year period from 1991 to 2020 indicating the wettest months are from October through to January with December (113mm) being the wettest on average. Spring and Summer are also notably wet on average with average monthly precipitation exceeding 90mm monthly from June – August. The driest month on average was April (87mm), with March and September also experiencing lower than average rainfall (90mm). Precipitation in Ireland is largely aligned to its oceanic climate, and it is no surprise that the wettest months across the winter align to the periods where low pressure Atlantic storms are most frequent. However, it is notable that the summer months (June – August) also have relative high rainfall (>100mm) on average.

Considering rainfall intensity and maximum rainfall during the wettest days, December, November and August each experience very wet days (daily rainfall ≤30mm) while daily maximums across the other months are ~27mm on average.

Figure 12-1: Baseline Climatology for Leitrim Ireland (1991-2020)



July was the warmest month with a mean temperature of 14.8°C with average mean surface temperatures across the summer months (July – August) >13.4°C. July is also the warmest month for maximum daily temperatures (23°C) which showcases the higher value ranges recorded during a particular month. Across May – September average maximum daily

temperatures exceed 20°C.

January is the coldest month with average mean surface air temperatures of 4.9°C, while January and February both have average minimum temperatures ≤2.7°C. For daily minimum temperatures which reference the lowest range values (10th percentile range), January remains the coldest at -2.8°C and several other winter and early spring months (November - March) also experience minimums of below 0°C.

Across the historical record, Leitrim has experienced several significant and notable storm events with wind speeds exceeding 100km/hr, and records broken in 2025 with Storm Éowyn (January 2025) with maximum sustained winds of 142km/hr recorded in county Galway. The occurrence of storms is concentrated within the winter period (December – February) with 8 named storms occurring annually on average according to Met Éireann (2025a).

Records from Knock Airport approximately 90km from the site (Met Eireann, 2025b) 1996-2021 shows mean 10m wind speeds 9.5 knots (17.5km/hr) and 90th percentile max gust <59knots up to 84 knots (109km/hr – 155km/hr respectively).

Regarding wildfire, Think Hazard (2025) highlights the risk of wildfire for Leitrim to be medium. Leitrim Climate Action Plan (2024) also regard wildfire risk as an emerging concern but not a significant risk currently. Several notable wildfire events across the historical baseline have been noted, such as several fires in May 2025 and previous years which stretched across several counties including Leitrim and Longford.

Overall, the baseline climatology for the project site and wider Leitrim region shows evidence of a high frequency of precipitation across the year with instances of very wet days (≥30mm). Winters are mild, with average minimums of <0°C and mild summers with average maximums of +15°C, but no significant extreme heat or prolonged drought.

12.6.4 Future CCRA Baseline

Climate Change Impacts and Projections for Ireland

Ireland is already experiencing increased annual rainfall in the north and west, including the area of the proposed development, with more variable patterns in the south and east (EPA, 2021). Key risks identified by the EPA relevant to the proposed project 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.
- Longer dry spells and increased temperatures will elevate the risk of wildfire.

Climate Modelling and Planning

International best practice and national policy such as the NCCRA (2024), 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 below.

- 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).

12.6.4.1 Key Findings from Climate Projections

Table 12-7 provides a detailed comparison of baseline and future climatology across a medium (RCP4.5) and high emissions scenario (RCP8.5) up to 2070. Key Projected changes include:

- Summer temperatures rising by over 2°C and overall mean temperatures increasing 1.4°C and 1.9°C by mid-century under RCP4.5 and RCP8.5 respectively.
- Summer rainfall decreasing while winter rainfall increases sharply, contributing to an overall increase in rainfall annually for the site location.
- Fewer cold winter nights and more frequent short heatwaves (≥5 days >25°C).
- Increased likelihood of dry spells and drought which may elevate the risk of wildfire.

This will result in longer dry periods and heavy rainfall events. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

Impacts resulting from climate change hazards will evolve and have the potential to include increases in global temperatures and increases in the intensity and frequency of rainfall days per year combined with increases in the intensity and frequency of low-pressure systems in the north Atlantic during the winter storm period. Therefore, it is expected that the climate over the proposed site in will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Table 12-7: 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 (2040-2070)	RCP8.5 (2040-2070)
Temperature	*Mean temp (°C)*	7.8	9.2 (+1.4°C)	9.7(+1.9°C)
	Mean Max temp (°C)	11.4	12.8 (+1.4°C)	13.2(+1.8°C)
	Mean Min temp (°C)	4.2	5.6 (+1.4°C)	6.2 (+2°C)
	Average of Daily Max temp (°C)	23 (July)	26.1	27
Precipitation and Flooding	*Annual precipitation (mm)*	1528	1582 (+54)	1604 (+76)
	Max 1-day (mm)	36	42 (+6)	44 (+8)
Storms and high winds	*Storm Frequency and Average speed (Descriptive)*	On Average 8 named storms annually with speeds exceeding 100km/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 (90th percentile range) (knots)[N.2]	59 – 84 (105 -155km/hr)		

Wildfire	*No. of Wildfires (Descriptive)*	• 2019 -12 • 2020 – 57 • 2021 - 18	Rising temperatures and prolonged dry spells are projected to elevate wildfire risk.	
Drought	*Absolute Drought (≥15 days with less than 1mm)*	Rare	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 combined Met Éireann, UK Met Office and Dutch Meteorological services.				
Note-2: Data from Knock Airport (~90km from site) between 1996-2021				

12.7 Assessment of Effects

12.7.1 Do Nothing Scenario

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

With respect to climate, the Do-Nothing 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 do-nothing effect is a lost opportunity for a beneficial effect on climate emissions in the long term.

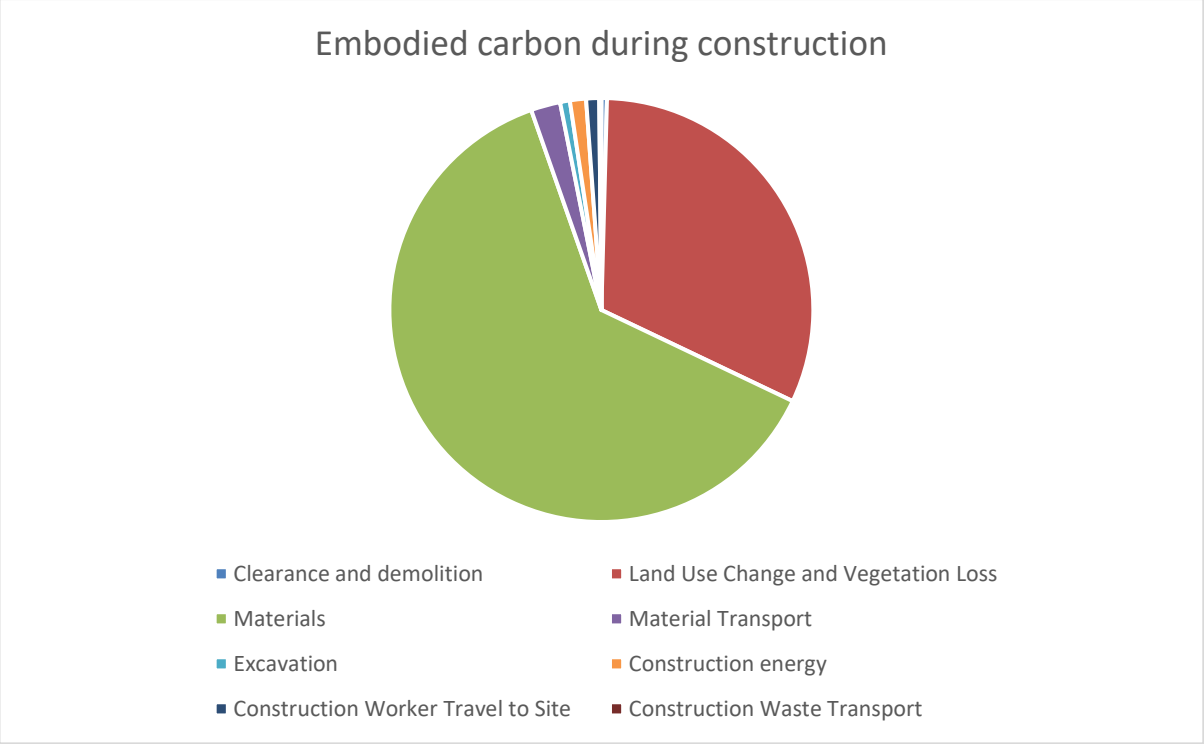
12.7.2 GHG Assessment

12.7.2.1Construction 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. Figure 12-2 shows the GHG emissions for the proposed project per construction activity.

The GHG assessment has highlighted the highest embodied carbon emissions are associated with the building materials used (63%) of construction phase emissions. 55% of material emissions are from the use of concrete, followed by steel (37%) and aggregate (8%). Land use change, through the removal of mixed forest, constitutes approximately 32% of the total construction phase GHG emissions. However, as the forests are to be replanted off site, the emissions associated with forest loss are nulled.

Figure 12-2: Construction Phase Greenhouse Gas Emissions by Activity



It has been calculated that the total estimated construction phase GHG emissions will be 13,530 tonnes CO_2e (see Table 12-8).

The GHG emissions from the development 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 12-8 and Table 12-9. In Table 12-9, GHG emissions have been compared against the carbon budget for the industry, and transport sectors in 2030 (DECC, 2024), against Ireland's total GHG emissions in 2024, 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 12-9 demonstrates the estimated total GHG emissions, which have been annualised over the 35-year project lifespan, are a small fraction of the sectoral budgets.

Table 12-8: 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	12,383	63%	Industry
Material Transport	444	2%	Transport
Clearance and Demolition	83	<1%	Industry

GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Predicted GHG Emissions as % of Construction Phase Total	Relevant Sector for Carbon Budget Comparison
Land Use Change and Vegetation Loss	6,267	32%	LULUCF
Excavation	148	<1%	Industry
Construction worker travel to site	197	1%	Travel
Construction energy	243	1%	Industry
Construction Waste Disposal	0	0%	Waste
Construction Waste Transport	32	<1%	Transport
Sub-total	19,737		
Replanting of felled forest	-6,267		LULUCF
Total Construction Phase GHG Emissions	**13,530**		

Table 12-9: 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 2024 Total GHG Emissions (existing baseline)	57,640,000	Total GHG Emissions	384	0.0007%
Non-ETS 2030 Target	27,721,670	Total GHG Emissions		0.0014%
2030 Sectoral Budget (Industry Sector)	4,000,000	Total Industry Emissions	367	0.009%
2030 Sectoral Budget (Transport Sector)	6,000,000	Total Transport Emissions	19	0.0003%

12.7.2.2Operational Phase

During the operational phase there will be no GHG emissions from the operation of the wind turbines. The estimated 77–100.8 MW from the turbines will generate a minimum of 222,592 MWh and a maximum of 291,393 MWh of renewable energy annually, assuming a 33% 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 51,333 tCO_2e (77MW) and 67,373 tCO_2e (100.8MW), once the GHG emissions from the construction phase (as outlined in Section 12.7.2.1) have been considered.

The estimated total GHG emissions savings for the 77MW scenario, when annualised over the 35-year proposed project lifespan, are equivalent to 0.1% of Ireland's total GHG emissions in 2024 (and 0.7% of GHG emissions from equivalent fossil fuel energy production), 1.7% of the total carbon budget for the electricity sector in 2030 and 0.4% 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.

Table 12-10: Estimated Operational Phase Project GHG Savings

Development Emissions & Savings	tonnes CO_2e	Baseline / Relevant Target	tonnes CO_2e	% of Baseline / Relevant Target
Annual Equivalent GHG Emissions from Power Plant Producing 223 GWh	51,897			
Annualised GHG Emissions due to Construction Phase (averaged over lifespan)	566			
Total Annual Savings Due to the proposed project (averaged over lifespan)	51,333	Ireland's Total GHG Emissions 2024 (existing baseline)	57,640,000	0.1%
		Ireland's GHG Emissions from Fossil Fuel Energy Production 2024 (existing baseline)	7,157,440	0.7%
		ETS 2030 Target (42% of 2005 ETS Level)	12,953,240	0.4%
		2030 Sectoral Budget (Electricity Sector)	3,000,000	1.7%

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 0.08 to 0.1 GW of that capacity and will abate Ireland's greenhouse gas emissions by between 51,331 tCO_2e (0.05 $MtCO_2e$) and 67,372 tCO_2e (0.07 $MtCO_2e$) for every year of operation.

12.7.2.3GHGA Significance of Effects

The TII 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.

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".

The purpose of the proposed project is to assist with the development of renewable wind energy in Ireland. Renewable energy is a key component of the National Climate Objective of achieving net zero by 2050 detailed within the 2015 Climate Act (as amended). Irelands trajectory to net zero requires significant renewables generated from on and offshore windfarms. As the project is a windfarm development it directly aligns with Ireland's net zero trajectory by 2050 and the CAP25 goal of producing 80% renewable electricity. Additionally, the production of renewable electricity will offset the GHG emissions produced during the construction of the project within the first year of its operation. According to the TII significance criteria described in Section 12.4.1.4 the significance of the GHG emissions during the construction, operational and decommissioning phases is beneficial as the net project GHG emissions will be below zero (i.e. the renewable electricity will offset GHG emissions once operational) and the project is aligned with the 2050 net zero trajectory.

Although the proposed project will result in GHG emissions during the construction phase, the proposed project will minimise its impacts through design and management measures (see Section 12.8). The level of mitigation described in Section 12.8 has therefore been considered when determining the significance of the proposed project's GHG emissions.

Based on the above reasoning, according to the TII significance criteria, the significance of the GHG emissions during the construction and operational phase is **minor adverse**.

The ISEP GHG guidance (ISEP, 2026) (which has been embraced by the updated TII Guidance (TII, 2022) in Section 6.7.2) describes minor adverse as follows:

"A minor adverse not significant impact is described with: A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures to achieve that has a minor adverse effect that is not significant. The project may have residual impacts but is doing enough to align with and contribute to the relevant transition scenario. A 'minor adverse' or 'negligible' non-significant effect conclusion does not necessarily refer to the magnitude of GHG emissions being carbon neutral (i.e. zero on balance) but refers to the likelihood of avoiding severe climate change and achieving net zero by 2050. A 'minor adverse' effect or better is a high bar and indicates exemplary performance where a project meets or exceeds measures to achieve net zero earlier than 2050."

In addition, the TII guidance (2022) describes minor adverse as:

- 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.

In accordance with 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*** due to the nature of GHG emissions and ***negative*** due to the release of GHG emissions. However,

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 and ***positive*** due to the displacement of fossil fuels and subsequent GHG emissions through the production of renewable electricity. The payback period demonstrates that GHG emissions associated with the construction phase will be offset by the operation of the turbines in a short time. The planned mitigation measures and the fact that the Proposed Development contributes to the trajectory to carbon neutrality, makes the overall impact on the climate ***not significant*** in EIA terms.

12.7.3 Climate Change Risk Assessment

12.7.3.1Construction & Decommissioning Phase

A detailed CCRA of the construction and decommissioning phase has been scoped out, as discussed in Section 12.4.2.1. However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 12.8.2.2.

- Flood risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding.
- Increased temperatures potentially causing water scarcity and prolonged periods of hot weather.
- Reduced temperatures resulting in ice or snow and [possible hazard to working conditions].
- Major Storm Damage, including wind damage.
- Wildfire resulting from dry spells and elevated temperatures.

12.7.3.2Operational Phase

To determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. Table 12-11 presents the initial qualitative climate hazards screening relevant to the proposed development. A number of climate hazards have been screened out of the assessment due to the proposed developments location.

Table 12-11: 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 affect 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	Surface water remains a key vulnerability for any proposed development during both construction, operational and decommissioning phases due to the sensitivity of construction materials, site access, and site assets to water exposure, therefore it is screened into this assessment.	Screen in

Climate-related Hazard	Hazard Screening Rationale	Screening
Fluvial flooding	The project site is in close proximity to fluvial waterways, therefore it is screened into this assessment.	Screen in
Drought	Droughts have occurred across Ireland, previously impacting water supply. Future reductions in availability would not directly impact the development and its operation, therefore it is screened out of this assessment.	Screen out
Wildfire	The area surrounding the site is largely forestry and peat lands and vulnerable to wildfire, therefore it is screened into this assessment.	Screen in
High winds and storms	Turbines, substation and other assets of the proposed development 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 development, 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 moderate risk from landslides at the proposed development location, therefore it is screened into this assessment.	Screen in
Sea level rise and coastal flooding	The site of the development is not a coastal location, therefore it is screened out of this assessment.	Screen out

12.7.3.2.1 Climate Vulnerability Assessment

The sensitivity and exposure of the development to the screened in climate hazards must first be determined to then determine the vulnerability of the proposed development to climate change. Flooding (pluvial & fluvial), extreme heat, extreme cold, wildfire, and extreme wind, lightning, landslide and subsidence have been considered as climate hazards in the context of the proposed development. The results of the vulnerability assessment are detailed in Table 12-12.

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.

Table 12-12: Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Pluvial & Fluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	1 (Low)	1 (Low)
Wildfire	2 (Medium)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	2 (Medium)	2 (Low)
Lightning	1 (Low)	1 (Low)	1 (Low)
Landslide and Subsidence	1 (Low)	2 (Medium)	2 (Low)

Flooding

Future increases in rainfall due to climate change may elevate the risk of pluvial and fluvial flooding. Small streams run through and adjacent to the site however, the elevated location of the site is likely to lead to rapid runoff and reduce flooding risk. The site-specific Flood Risk Assessment (FRA) from 2025 conducted by TOBIN indicated the site lies within Flood Zone C, determining a low risk of flooding (less than 0.1%). The design assessment confirmed that the placement of critical infrastructure, including the substation and electrical assets, is adequate to withstand flooding and raised elevation to mitigate elevated risk, while positioned at a safe distance from areas at risk.

As part of the site's flood risk design, the stormwater drainage system is designed to comply with all relevant standards and is designed to accommodate projected climate-related increases in rainfall.

Extreme Wind

In relation to extreme winds, the turbines, overhead lines and meteorological mast 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 and electrical Storms

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 development 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.

Wildfires

According to the Think Hazard tool (2025), wildfire hazard for County Leitrim is classified as 'medium'. The LCC Climate Action Strategy (2024) and LCC Climate Change Risk Assessment (2023) acknowledges wildfires as an emerging risk but currently categorizes it as low. Future climate projections indicate an increase in conditions favourable to wildfires, including higher temperatures and prolonged dry periods.

For the proposed wind farm site, land clearance activities will remove high-combustion materials, creating buffers and firebreaks near turbines, substation and other built assets. While wildfires could cause pavement softening on access roads requiring repair, emergency interventions are unlikely given the level of site access. Additionally, systems will be implemented to prevent wildfire impacts on turbines.

Based on these measures, the proposed development is considered to have low vulnerability to wildfire risk.

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 thawing of road surfaces and deterioration of auxiliary systems and infrastructure. While 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. Nonetheless such impacts will be mitigated through contingency plans.

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.

Landslides

Mapping by Geological Survey Ireland (GSI, 2025) indicates that the proposed project site lies within an area of low to moderately high landslide susceptibility. Importantly, there is no recorded history of landslides within the wind farm site boundary or surrounding areas (GSI, 2025). A peat stabilisation risk assessment report was carried out by Ciaran Reilly & Associates (2025) and determined with embedded design mitigation the site is appropriate for development as detailed in the design. The assessment identified several areas that were medium susceptibility for peat landslide while the majority of the site was Low.

The report noted that while climate change under both RCP4.5 and RCP8.5 scenarios may increase landslide risk due to heavier rainfall and drought cycles, these potential impacts have been addressed in the project design. Turbine locations and site layout have been selected to minimize vulnerability.

Summary

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

12.7.3.3CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are considered ***direct*** due to receptors presence, ***long-term*** due to the Proposed Development's lifespan ***negative*** as climate extremes have been shown to damage or adversely affect infrastructure, and ***imperceptible*** due to the low vulnerability of the location of the Proposed Development to the effects of climate change. Overall this is considered to be ***not significant*** in EIA terms.

12.8 Mitigation Measures

12.8.1 GHGA

12.8.1.1Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Best practice measures to reduce the embodied carbon of the construction works will be implemented:

- 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; and
- Sourcing materials (aggregates, concrete and steel) locally where possible to reduce transport related CO_2 emissions.

12.8.1.2Operational 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 traffic. No other mitigation is proposed.

12.8.2 CCRA

12.8.2.1Embedded 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 12.8, and are summarised as follows:

- The drainage design for the proposed project has been adequately designed with an additional consideration for climate change which will include expanded drainage and utilise the natural environment for drainage.
- Lightning protection for the turbines and meteorological mast 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 Development 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.

12.8.2.2Construction and decommission 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.

12.8.2.3Operational 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 traffic. No other mitigation is proposed.

12.9 Residual Effects

The impact to climate due to a Proposed Development must be assessed as a whole for all phases. The Proposed Development will result in some impacts to climate through the release of GHG emissions, an amount of which will occur regardless of mitigation due to the nature of the Proposed Development. However, best practise mitigation measures are put forward for the Proposed Development along with a commitment by the applicant, in common with other companies in Ireland, to reduce climate impacts where possible and practicable. Further, the

purpose of the proposed project is to assist with the development of renewable wind energy in Ireland which is beneficial to the climate.

The measure of impact is how the Proposed Development contributes to or impedes the ability of Ireland to reach carbon neutrality by 2050 as described in Section 12.7.2.3. As such, the Proposed Development is considered to have a ***direct*** impact due to its presence, that is ***long-term*** as a result of the estimated lifetime of the infrastructure and ***positive*** due to the displacement of fossil fuels through the production of renewable electricity. The planned mitigation measures and the fact that the Proposed Development contributes to the trajectory to carbon neutrality, the impact on the climate is considered to be ***not significant*** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the location and structure of the Proposed Development as a result of climate change. The residual effect of climate change on the Proposed Development is considered ***direct*** due to receptors presence, ***long-term*** due to the Proposed Development's lifespan ***negative*** as climate extremes have been shown to damage or adversely affect infrastructure, and ***imperceptible*** due to the low vulnerability of the location of the Proposed Development to the effects of climate change. Overall this is considered to be ***not significant*** in EIA terms.

The following table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 12-13: 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 and operational	Positive	Not significant	National	Likely	Long-term	Direct
Climate change and related vulnerability of the proposed development	Negative	Not significant	Local	Likely	Long-term	Direct

12.11 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 GHG assessment has been presented in the context of the national and sectoral carbon budgets for the whole of Ireland and the ability of the Proposed Development 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.

12.12 Transboundary Effects

As discussed in Section 12.11, the impact of GHG emissions on climate are not constrained by national boundaries. The effects identified during the construction phase in Section 12.7.2.1 will negatively impact the global climate due to the release of GHG emissions. Conversely, the effects identified during the operational phase in Section 12.7.2.2 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 12.7.2.3.

12.13 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.
- 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 development, and no significant effects on the proposed development itself as a result of climate change hazard.

12.13.1 Greenhouse Gas Assessment

The impact of GHG emissions during the construction, operational and decommissioning 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 GHG assessment considered the GHG emissions arising from embodied carbon in materials, material transportation, water usage, fuel usage, site excavation, waste disposal, and the carbon savings from the operation of the proposed project.

The estimated minimum output of 77 MW from the proposed project will generate 223 GWh annually, which will amount to annual GHG emission savings of approximately 51,331 tCO_2e at

the 2025 carbon intensity, which is equivalent to 1.7% of the total carbon budget for the electricity sector in 2030 (Government of Ireland, 2025).

The proposed project will significantly 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 significant 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_2eq 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. This equates to a **direct, positive and long-term** 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, operational and decommissioning phases of the proposed project.

12.13.2 Climate Change Risk Assessment

The vulnerability of the proposed project to climate change was assessed by the CCRA, in line with EPA National Climate Chage 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.

Sensitive elements of the proposed project included drainage, access roads, buildings, underground utilities, turbines, ESB Substation, foundations, and cables. Climate hazards included flooding (pluvial), extreme temperatures, wind, wildfire, and lightning.

Mitigation measures for sensitive elements, such as flood protection and SuDs, wind turbine design and control during high winds and lightning protection measures, and consideration to wildfire 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, negative, long-term and not significant, 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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