

Proposed Gathabawn Windfarm

Environmental Impact Assessment Report

Chapter 12: Climate



September 2026

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CHAPTER 12 CLIMATE

EIAR 12.1 INTRODUCTION

Climate is defined as the average weather over a period of time. Climate change is a significant change in this average weather. Climate change is a natural phenomenon but since the Industrial Revolution in the 1800's has accelerated as a result of human activities through the release of greenhouse gases (GHGs). These GHGs are altering the Earth's atmosphere resulting in a 'Greenhouse Effect'. This is causing an increase in the atmosphere's heat trapping abilities, resulting in increased average global temperatures (global warming). The release of GHGs as a result of burning fossil fuels, has been one of the leading factors in the creation of this 'Greenhouse Effect'.

For EIA purposes, the assessment of the environmental topic Climate includes both the impact of a proposed project on climate, through GHG emissions or reductions in emissions; and the impact of climate change on the proposed project, or the vulnerability of a proposed project to climate change. This chapter focusses on GHG emissions associated with the proposed Gathabawn Windfarm, the vulnerability is assessed in [Chapter 19: Vulnerability of the Project to Major Accidents, Natural Disasters and Climate Change](#).

Addressing climate change requires two types of responses: adaptation and mitigation. Climate mitigation is about reducing emissions of greenhouse gases to limit the amount of warming that happens over the coming decades. **The Gathabawn Windfarm is a climate mitigation project.**

EIAR 12.1.1 Competent Expert

The Climate chapter was prepared by Ciara Nolan, MSc in Applied Environmental Science and BSc (Hons) in Energy Systems Engineering, of AWN Consulting, a Trinity Consultants company. AWN Consulting is a multidisciplinary environmental consultancy. Ciara is a Member of the Institute of Air Quality Management (MIAQM) and Institute of Environmental Sciences (MIEnvSc). She has 10 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for numerous developments including residential, industrial, commercial, pharmaceutical, windfarm and data centres.

EIAR 12.1.2 Sources of Information

Consultation, and desktop studies were carried out in order to gather information on the baseline environment.

Table 12-1: Sources of Baseline Information for Climate

Consultation
No feedback was received from consultees
Desktop
- Environmental Protection Agency (2026) Ireland's Provisional Greenhouse Gas Emissions 1990-2025 - Environmental Protection Agency (2026) Ireland's Greenhouse Gas Emissions Projections 2025-2030
<u>Review of the other EIA Report Chapters as follows:</u>
Chapter 5: Description of the Development

EIAR 12.1.3 Methodology Used

The evaluation for Climate has been carried out in accordance with the Transport Infrastructure Ireland (TII) guidance document *PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document*, and has also used the TII Carbon Tool to quantify the project's GHG emissions. The TII guidance is based on the Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management & Assessment (IEMA)) guidance document 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (ISEP, 2022). The TII methodology has been used to determine the significance of potential impacts. Consideration has also been given to the supplementary guidance published by ISEP 'Assessing Greenhouse Gas Emissions and Evaluating their Significance Edition 2.1, April 2026 with Supplementary Guidance'. The methodology can be found in full in [Appendix 12.1: Methodology for the evaluation of Climate](#). The author's extensive experience with EIA preparation and climate management also informs this report.

A list of guidelines and legislation which were taken into account during the evaluation of this chapter is also included in [Appendix 12.1](#).

EIAR 12.1.4 Statement on Certainty and Sufficiency of Information Provided

The information used to compile this chapter is collated from site-specific investigations, data and documents generated by public bodies and statutory agencies. All sources of information are referenced throughout the chapter with a full reference list provided in Section 12.8.

A review has been carried out of Ireland's National, European and International commitments and targets on climate action, along with data on Ireland's GHG emissions from 1990 to 2025, in order to identify trends in the baseline environment. The Climate Change Advisory Council has published carbon budgets. The EPA has published provisional estimated data for Ireland's GHG emissions up to 2025, and it is considered that this data is sufficient to evaluate the effects of the project on Climate.

In respect of Climate, no material limitations or difficulties were encountered during the course of the studies carried out to inform the assessment of impacts of the whole Gathabawn Windfarm project on Climate.

EIAR 12.2 SENSITIVE ASPECTS

EIAR 12.2.1 Overview of Climate

Climate Change:

The release of greenhouse gases (GHGs) is altering the Earth's atmosphere resulting in a 'Greenhouse Effect'. This is causing an increase in the atmosphere's heat trapping abilities, resulting in increased average global temperatures (global warming). The release of carbon dioxide as a result of burning fossil fuels, has been one of the leading factors in the creation of this 'Greenhouse Effect'.

The scientific community and governments across the world are in agreement - the climate is changing, and a stronger link between the planet's warming and its changing weather patterns is evident. Though it can be hard to pinpoint whether climate change intensified a particular weather event, the trajectory is clear — climate change is already affecting the entire world, with extreme weather conditions such as drought, heat waves, heavy rain, floods and landslides becoming more frequent, including in Europe. Other consequences of the rapidly changing climate include rising sea levels, ocean acidification and loss of biodiversity. Ireland has directly experienced the extreme weather events of flooding, drought and extreme snow fall. The shift in climate is bringing profound changes in terms of desertification, rising sea levels, displaced population, profound challenges to the natural world and economic and social disruption. We are close to a tipping point where these impacts will sharply worsen. Decarbonisation is now a must if the world is to contain the damage and build resilience in the face of such a profound challenge.

In 2022 the **UN described climate change as “the defining issue of our time and we are at a defining moment. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale”.**

Climate Action:

Addressing climate change requires two types of responses: adaptation and mitigation.

Climate change adaptation is how we can adapt our current and future projects to the impacts of climate change by building in increased resilience to various climate related hazards, such as building up coastal defences, or using ecoservices in flood relief schemes, or policies that change human behaviour.

Climate mitigation is about reducing emissions of greenhouse gases to limit the amount of warming that happens over the coming decades. Reducing the dependence on fossil fuels in all aspects of our lives is a key factor in climate mitigation (Murphy *et al.* 2019).

The Gathabawn Windfarm is a climate mitigation project.

The *raison d'être* of Gathabawn Windfarm is the mitigation of GHG emissions, through the generation of electricity from clean resources. Every kWh of electricity generated by a wind turbine without the emission of GHGs, offsets the generation of a kWh of electricity from fossil fuels which does emit GHGs.

EIAR 12.2.2 Zone of Influence/Study Area

The area or zone of influence around the proposed Gathabawn Windfarm within which sensitive aspects of the environment could be affected by the project is called the Study Area herein. The Study Areas for the Sensitive Aspects of the Climate environment are set out in the table below.

Table 12-2: Study Area in relation to sensitive aspects of the Climate environment

Sensitive Aspect	Zone of Influence/Study Area	Justification for the Study Area extent
Climate Change (Global Atmosphere)	Irish State	While the effect of climate change is global, the study area for this report relates to the Irish State, and Ireland's commitments and targets under various National and EU Climate Agreements.

EIAR 12.3 BASELINE ENVIRONMENT

The context and characteristics of the baseline environment, and the trends and evolution thereof, in relation to *Climate Change (Global Atmosphere)* are described in the subsections below.

EIAR 12.3.1 Context and Characteristics of CLIMATE CHANGE (Global Atmosphere)

EIAR 12.3.1.1 Climate Change

Carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) are the main greenhouse gases that are causing climate change. GHG emissions are not geographically limited. They have a global effect rather than directly affecting any specific local receptor to which a level of sensitivity can be assigned.

According to the United Nations Global Goals - Goal 13: Climate Action:

***“Climate change is a real and undeniable threat to our entire civilization.
The effects are already visible and will be catastrophic unless we act now.***

***Through education, innovation and adherence to our climate commitments,
we can make the necessary changes to protect the planet.”***

The world’s climate is changing rapidly with temperatures increasing faster in the last 50 years, than in any other 50-year period in the last 2000 years. Human influence has warmed the atmosphere, ocean and land, leading to widespread and rapid change, including changes to our weather system.

While the effects of climate change are global, according to The Status of Ireland’s Climate 2020 (EPA, 2021), the following changes have been observed in Ireland:

- **Greenhouse Gas emissions have continued to rise** - Atmospheric concentrations of carbon dioxide, methane and nitrous oxide are the highest observed since measurements began. Background carbon dioxide (CO₂) concentrations reached 414 ppm in 2020 - which is approximately a 50% increase compared to pre-industrial levels. Methane (CH₄) concentrations are at 1940 ppb - which is approximately a 170% increase compared to pre-industrial levels. Nitrous oxide (N₂O) concentrations are now above 330 ppb - which is approximately a 20% increase compared to pre-industrial levels.
- **Annual average amounts of precipitation are increasing** - Annual precipitation was 6% higher in the period 1989 to 2018, compared to the 30-year period 1961 to 1990. The decade 2006 to 2015 was the wettest on record.
- **Aerosols** - Atmospheric levels of sulphur over the 35-year period 1980 - 2015, as measured at Valentia Observatory, Co. Kerry show an approximately 80% reduction, highlighting the success of regulation and technological advances.
- **Annual average air temperature is rising** - The annual average surface air temperature in Ireland has increased by approximately 0.9°C over the last 120 years, with a rise in temperatures being observed in all seasons. Fifteen of the top 20 warmest years on record have occurred since 1990. The length of warm spells has increased slightly over the last 60 years.
- **Sea levels continue to rise** - Satellite observations indicate that the sea level around Ireland has risen by approximately 2-3mm/year since the early 1990s. Analysis of sea level data from Dublin Bay suggests a rise of approximately 1.7mm/year since 1938 which is consistent with global average rates.

- **The ocean is becoming more acidic** - Measurements in the surface waters to the west of Ireland between 1991 and 2013 indicate an increase in ocean acidity which threatens calcifying species such as corals, shellfish and crustaceans.
- **The ocean is getting warmer** - the average sea surface temperature at Malin Head over the 10 years between 2009 and 2018 was 0.47°C above the 1981-2010 mean.
- **River flows** - There is an increase in flows across most of the country. However, there is evidence in recent years of an increase in potential drought conditions, especially in the east.
- **Land Cover** - Land cover observations since 1990 show increases in the area covered by both artificial surfaces and forests and a decrease in wetland areas which include peatlands.
- **Vegetation Fires** - Between 4,000 and 6,000ha are burned annually, with most fires occurring between March and June each year. Upland heaths and blanket bogs have the strongest association with fires.
- **Above Ground Biomass** - The total volume of trees and hence carbon sequestered in forest increased by 38% between 2006 and 2017.

- *The science is clear: to avert the worst impacts of climate change and preserve a liveable planet, global warming needs to be limited as much as possible and as a matter of urgency. (IPCC)*
- *Limiting global warming to below 1.5°C will significantly reduce the risks, adverse impacts, and related losses and damages from climate change. Failing to do so will lead to increasingly frequent and dangerous extreme weather events including heatwaves, droughts, wildfires, and heavy precipitation and flooding. (IPCC)*
- *Every fraction of a degree of warming matters. (UN)*

EIAR 12.3.1.2 Climate Action

Climate action through the cutting of greenhouse gas emissions, is a key element of the European Green Deal, which aims to cut emissions by at least 50% by 2030, with the ultimate goal of achieving climate neutrality by 2050. It is the EU's contribution to the Paris Agreement, which the EU and all its countries ratified and which set the goal of keeping global warming to maximum +1.5°C compared to pre-industrial levels.

As part of Ireland's mitigation response, ambitious national renewable energy generated electricity (RE-E) targets have been set in the White Paper **Ireland's Transition to a Low Carbon Energy Future 2015 – 2030**. This set out a vision for transforming Ireland's fossil fuel-based energy sector into a clean, low carbon system by 2050.

Ireland's Climate Action and Low Carbon Development (Amendment) Act 2021, (the 2021 Climate Act), was signed into law in 2021. The purpose of the 2021 Climate Act is to provide for the approval of plans "for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050".

The Climate Action Plan 2025 (CAP25) is the fourth annual update to Ireland's Climate Action Plan. The Plan was published on 15 April 2025. According to the Gov.ie website the Plan lays out a roadmap of actions which will ultimately lead us to meeting our national climate objective of pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy.

The Climate Action Plan aligns with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022. Climate Action Plan 2025 builds upon Climate Action Plan 2024 by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings and it should be read in conjunction with Climate Action Plan 2024. CAP24 is structured to identify key measures in each sector of the economy. It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022 and reiterates Ireland's international commitments to achieving international goals. In CAP25, targets are given for 2025 and 2030, as well as 2031-2035.

Achieving these goals will require no less than a national transformation in how we work, travel, heat our homes, source our energy and use our land. In order to halve our emissions by 2030, and achieve climate neutrality by 2050, Ireland needs to reduce its use of fossil fuels considerably.

ElAR 12.3.1.3 Current Status of Climate Action in Ireland

The Climate Action Plan 2025 (CAP25) highlights vital high-impact sectors, each with an associated emissions reduction targets to assist Ireland in achieving its 2030 and 2050 climate goals. These are Electricity; Transport; Built Environment (Residential); Built Environment (Commercial); Industry; Agriculture and Other (F- Gases, Waste & Petroleum refining), and Landuse. The Electricity sector is relevant to the subject development, and is discussed further below.

ElAR 12.3.1.3.1 Electricity Targets

Renewable electricity (RE-E) plays a crucial role in Ireland's efforts to combat climate change. Under the Climate Action Plans, Government plans **to increase the proportion of RE-E to up to 80% by 2030 with targets of 9GW from onshore wind**, 8GW from solar and at least 5GW of offshore energy by 2030.

In 2025, just over 4GW of onshore wind energy has been installed in Ireland – less than halfway to the Climate Action Plans targets of 9GW (onshore) by 2030. While renewable electricity is growing, so too is electricity demand. Clearly reaching 9GW of onshore capacity by 2030 will be a challenge but will result in considerable benefits.

ElAR 12.3.1.3.2 Carbon Budgets

The Climate Action and Low Carbon Development (Amendment) Act 2021 provides for the development of carbon budgets. The 2021 Climate Act defines the carbon budget as *"the total amount of greenhouse gas emissions that are permitted during the budget period"*. The provisional 2025 GHG figures published by the EPA indicate that from 2021 to 2025 Ireland has used 99.6% or 293.9 MtCO₂e of the 295 MtCO₂e Carbon Budget for the five-year period 2021-2025. This leaves 1.1 Mt CO₂e of the budget available to be carried over into budget 2 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 5 years.

The sectoral emission ceilings for 2030 were published in July 2022. Electricity has a 75% reduction requirement and a 2030 emission ceiling of 3 MtCO₂e (million tonnes of Carbon Dioxide equivalent).

According to CAP25 electricity emissions have decreased by 26.2% from 2018 to 2023 due to the increasing share of renewable generation and net electricity imports. Onshore wind energy now counts for over a third of our electricity supply. The electricity sector has one of the smallest carbon budgets and most ambitious reduction requirements, especially considering the increased burden from other sectors moving to electrification. Work is ongoing to reinforce the electricity grid, significantly expand generation from wind and complete the building of new interconnectors with France and the UK. The scale of the challenge to meet

the sectoral emissions ceiling is immense and requires policies to be moved from an 'end of decade' target trajectory towards a 'remaining carbon budget' target.

Provisional GHG emissions data for 2025 published by the EPA indicate that emissions from the electricity 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.

In relation to compliance with the sectoral emissions ceilings, the provisional GHG emissions estimates 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.

Ireland is at the forefront of global efforts to harness the enormous potential of renewable energy.

The Intergovernmental Panel on Climate Change (IPCC) in their most recent assessment report has singled out wind and solar power as, by far, being the most cost-effective technologies to keep the planet on track to staying within 1.5 degrees temperature increase.

A renewables led system is the core of Ireland's plan to radically reduce emissions in the electricity sector and protect our energy security through the use of indigenous energy as enshrined in the Government's recently launched Energy Security Package.

ElAR 12.3.2 Existing Sources of Impacts

Energy, industry, agriculture and waste disposal are among the major greenhouse gas emitters.

The burning of fossil fuel, like coal, oil and gas to generate electricity is an existing source of significant adverse impacts to the Global Atmosphere and is one of the main drivers of climate change.

According to the SEAI Energy in Ireland 2025 Report - Ireland's gross electricity supply in 2024 was 36.3 TWh. In total, fossil fuel generation accounted for 45.3% of the electricity supply, with renewable generation accounting for 40.0% of electricity supply. Other sources, consisting of net-imports and generation from non-renewable wastes, accounted for the remaining 14.8% of supply in 2024 (SEAI, 2025).

According to the latest EPA data, the Electricity sector emitted approximately 6.3 MtCO₂e in 2025. This is far in excess of the 2030 emission ceiling of 3 MtCO₂e.

ElAR 12.3.3 Importance and Sensitivity to Change

Importance

Climate change poses significant risks to Ireland's economy, society and environment. According to the Department of the Taoiseach (2023),

"the climate crisis is the defining challenge of our time. We have the opportunity to act now to mitigate the worst effects of climate change and secure a resilient future for generations to come. The Programme for Government and the Climate Act 2021 commit Ireland to halving our greenhouse gas emissions by 2030 compared to 2018 levels and reaching net zero by 2050. Our pathway to achieving these targets is set out in the Climate Action Plan. It is critical that our ambition is matched

with action. Our progress on the journey to net zero is tracked by quarterly Progress Reports on the Climate Action Plan, outlining how we are performing across all sectors, with additional attention to high impact actions due for delivery.”

Reflecting our commitment to addressing this global challenge, Ireland is a party to the United Nations Framework Convention on Climate Change (UNFCCC), and the Paris Agreement, which together provide the international legal framework for addressing climate change. As a member of the EU, Ireland also participates in the EU Emissions Trading System (EU ETS), an essential tool for reducing greenhouse gas emissions. Ireland also committed to reaching national targets for reducing our greenhouse gas emissions by 2020 and 2030, under the EU Effort Sharing Decision and EU Effort Sharing Regulation.

The EU Renewable Energy Directive III (RED III) entered into force on 20 November 2023 and establishes targets for increased renewable energy use in the European Union. RED III sets an EU-wide target of 42.5% renewable energy consumption by 2030. Relating to the transposition of RED III into Irish legislation, S.I. No. 274 of 2025 European Union (Planning and Development) (Renewable Energy) Regulation 2025 added a new section to section 177AA of the Planning & Development Act 2000, whereby Amendment 15 states

Amendment of section 177AA of Act of 2000

15. Section 177AA of the Act of 2000 is amended by the addition of the following subsection after subsection (9):

*“(10) Proposed development that is the **planning, construction and operation of a renewable energy plant**, any works necessary for the connection of such a plant to the grid, and any related grid or storage assets, **is presumed to be in the overriding public interest and serving public health and safety** when balancing legal interests in the individual case.” [authors emphasis]*

Ireland’s Climate Action and Low Carbon Development (Amendment) Act 2021 (the Climate Act) provides a detailed framework identifying how Ireland will achieve its 2030 targets and puts Ireland on a trajectory which is consistent with achieving net zero emissions by 2050. Renewable electricity plays a crucial role in Ireland’s efforts to combat climate change. The annual Climate Action Plans lay out a roadmap of actions seek to lead Ireland to meeting the national climate objective of *pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy*. The Climate Action Plans align with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022 and sets an ambitious target of having an 80% share of electricity generation capacity coming from renewable sources by 2030, to create a more sustainable and resilient energy system for the future.

Sensitivity

In relation to GHG emissions these are assessed against compliance with national and sectoral targets and ceilings. 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.

These declarations, in conjunction with Ireland’s current failure to meet its EU binding targets under Regulation 2018/842 results in any changes in GHG emissions either beneficially or adversely being of more significance than previously viewed prior to these declarations.

In line with the approach in the ISEP guidance document ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’ (ISEP, 2022):

“GHG emissions are not geographically limited. They have a global effect rather than directly affecting any specific local receptor to which a level of sensitivity can be assigned. **The receptor for GHG emissions is the global atmosphere. The receptor has a high sensitivity, given the severe consequences of global climate change and the cumulative contributions of all GHG emission sources.**

EIAR 12.3.4 Evolution of the Baseline Environment (the ‘Do-Nothing’ scenario)

The EPA report ‘Ireland’s Greenhouse Gas Emissions Projections 2025-2030’ (EPA, 2026) includes total projected GHG emissions and a breakdown of projected GHG 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, 2026) 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 MtCO₂e is expected to be exceeded by 53 to 81 MtCO₂e.

Under the Ireland’s Climate Action Plans, the Government is targeting 80% renewable energy generation in Ireland by 2030. The target is for 9GW to be generated by onshore wind, a doubling of existing capacity. The trend in Ireland in this decade is to continue to develop the on-shore wind industry.

Under the Do-Nothing Scenario where the proposed Gathabawn Windfarm does not proceed, the renewable electricity from the Gathabawn wind turbines will not be generated and the **subsequent benefits of GHG offsets and the critical contribution to Ireland’s Climate Action Plan and 2030 targets will not occur.**

EIAR 12.4 IMPACT OF THE GATHABAWN WINDFARM PROJECT

This section comprises an evaluation of the impacts of the whole Gathabawn Windfarm project on the receiving climate environment.

EIAR 12.4.1 Criteria and Methodology

The criteria used for impact evaluation in this report is based on the Transport Infrastructure Ireland (TII) guidance document *PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document*, and the TII Carbon Tool.

The methodology for determining the significance of impacts to Climate is based on the extent to which the trajectory of GHG emissions or level of climate mitigation from the project aligns with Ireland's GHG trajectory to net zero by 2050, and criteria outlined in the TII PE-ENV-01104 guidance document, as outlined in [Appendix 12.1](#).

EIAR 12.4.2 Source-Pathway-Receptor

The following sources of impacts and pathways for these impacts to the identified receptors (sensitive aspects) of Climate, are listed below:

EIAR 12.4.2.1 Sources of Impact

Construction Phase

- Excavation and relocation of soils and rock
- Importation of construction materials
- Use of machinery and vehicles run on hydrocarbons
- Movement of traffic during material deliveries
- Land use change (incl. forestry felling)
- Embodied carbon in construction materials
- Embodied carbon associated with the turbines

Operational Phase

- **Operating turbines**
- Use of vehicles and machinery during maintenance works;

Decommissioning Phase

- Movement of soils
- Use of machinery and vehicles run on hydrocarbons
- Wind turbine end of life treatment

EIAR 12.4.2.2 Pathways

- Air
- National and European Climate Action Targets

EIAR 12.4.2.3 Sensitive Aspects/Receptors of Impacts

- Climate Change (Global Atmosphere)

EIAR 12.4.3 Overview of the whole Gathabawn Windfarm project**EIAR 12.4.3.1 The Currently Proposed Gathabawn Windfarm**

Gathabawn Windfarm the subject of this Planning Application, comprises 12 turbines proposed for 2 areas - Ballylehaun and Ballyring. In addition to the turbines, the windfarm development also includes turbine hardstanding areas, site roads, 2 no. Control Buildings; 1 no. 30m meteorological mast, underground cabling and haul route works between Ballylehaun and Ballyring, and ancillary and facilitating works.

The windfarm is the main element of the whole Gathabawn Windfarm project and this windfarm element is subject of this Planning Application.

EIAR 12.4.3.2 The Other Elements of the Whole Gathabawn Windfarm Project

The other element of the whole Gathabawn Windfarm project comprises the Gathabawn Windfarm Grid Connection, which includes underground cabling from Ballyring to a new Substation in Parksgrove townland near Ballyragget, which is circa 7km east of the windfarm site, the Grid Connection also includes underground cabling from the new Substation to the nearby existing Eirgrid Ballyragget Substation, in Moatpark townland.

These other elements are not included as part of this Planning Application, but are considered and assessed in this EIA Report in order to facilitate the evaluation of the whole project. These other elements will be subject to a separate Planning Application, at a future date.

EIAR 12.4.4 Evaluation of effects on Climate

The findings of the evaluation of the effects of the whole Gathabawn Windfarm project on Climate are listed in the table below. The relevant phases of the development are the construction, operational and decommissioning phases which are denoted by C, O and D respectively.

The evaluations follow this summary table.

The following effects are evaluated in detail to determine whether or not they are likely to be Significant.

Table 12-3: List of effects to Climate evaluated in detail

HUMAN RECEPTORS	<i>EIAR Section</i>
Full Life Cycle of the Project (C,O,D):	<i>EIAR 12.4.4.1</i>
Greenhouse Gas Assessment for the whole Gathabawn Windfarm project	

EIAR 12.4.4.1 Greenhouse Gas Assessment for the whole Gathabawn Windfarm project

Sensitive Aspect:	Climate Change
Sensitivity:	High (as per Section EIAR 12.3.3)
Impact Source(s)	Construction, maintenance and decommissioning of the windfarm Production of renewable energy from the Operating turbines
Impact Pathway(s)	National & European Climate Action Targets
Project Stage	Full Life Cycle

Overview of Impact (general):

This Greenhouse Gas Assessment quantifies the GHG emissions and offsets from the Gathabawn Windfarm project during its lifetime and contextualises the magnitude of the impact of these emissions/offsets against relevant carbon budgets, targets and policy.

Wind farms in Ireland mitigate climate change by generating electricity without producing greenhouse gas emissions, offsetting CO₂ annually and reducing reliance on fossil fuels.

1 gigawatt = 1000 kilowatts

Examination of the Impact of the Gathabawn Windfarm project:

GHG emissions due to windfarm construction, maintenance and decommissioning – works and activities:

The Gathabawn Windfarm project will result in total GHG emissions of 29,237 tonnes CO₂e associated with the construction phase and operational maintenance activities. Construction phase sources of GHG emissions include landuse change; embodied carbon in the non-turbine materials – i.e. imported capping stone, concrete and other construction materials; and associated transport emissions; excavation, groundworks and landscaping works; construction activities; travel associated with site personnel; and wastes. Operational sources of GHG emissions include transport emissions for maintenance activities, maintenance wastes and associated transport.

GHG Assessment Category	Predicted GHG Emissions (tCO ₂ e)	Relevant Sector for Carbon Budget Comparison
Materials	25,914	Industry
Material Transport	304	Transport
Site Clearance	29	Industry
Excavation	1,124	Industry
Construction energy	1,321	Electricity
Construction water	3	Industry
Construction Waste Disposal	7	Waste
Construction site material waste transport	38	Transport
Construction Worker Travel to Site	461	Transport
Operational Transport	5	Transport
Operational Waste Disposal	0.2	Waste
Operational Waste Transport	3	Transport
Maintenance	28	Industry
Total	29,237	n/a

The total 29,237 tonnes CO₂e for the development, when averaged over the 35-year lifetime of the development, equates to 835 tonnes CO₂e which is 0.003% of Ireland's 2030 non-ETS target of 27.7 MtCO₂e. Project total Industry, Transport, Waste and Electricity emissions are a minor fraction of the relevant 2030 sectoral emissions ceilings.

There will be very low levels of GHG emissions during the Operational Phase due to the extremely low use of machinery/vehicles on site, limited to maintenance works and infrequent large component replacements. GHG emissions associated with operational phase activities have been included in the total figure above. GHG emissions during the Decommissioning Phase will also be very low due to the low numbers of plant and machinery on site during decommissioning, the short duration of works (approx. 4-6 months) and low emissions associated with the use of soils in berms at the windfarm site being moved within the site to cover over the

turbine foundations and hardstands. GHG emissions from the decommissioning phase have been screened out of the assessment and are not included in the figures above (see [Appendix 12.1](#))

GHG emissions due to the Other Elements of the Gathabawn Windfarm Project:

Other elements of the whole project include the Candidate Gathabawn Grid Connection. There will be total GHG emissions of 22,240 tonnes CO₂e as a result of the proposed grid connection and associated works. This includes emissions associated with landuse change; embodied carbon in the materials; transport emissions; construction fuel usage; construction water use; and wastes. There will be a saving in carbon emissions of 22 tonnes CO₂e as a result of reinstatement and landscaping works associated with the proposed grid connection which has been accounted for in the total figure specified.

GHG Assessment Category	Predicted GHG Emissions (tCO ₂ e)	Relevant Sector for Carbon Budget Comparison
Materials	21,010	Industry
Material Transport	304	Transport
Site Clearance	6	Industry
Excavation	17	Industry
Restoration/replanting	22	LULUCF
Construction energy	399	Electricity
Construction water	3	Industry
Construction Waste Disposal	11	Waste
Construction site material waste transport	6	Transport
Construction Worker Travel to Site	461	Transport
Operational Transport	0.41	Transport
Total	22,240	n/a

The total 22,240 tonnes CO₂e for the Candidate Gathabawn Grid Connection, when averaged over the 35-year lifetime of the development, equates to 635 tonnes CO₂e which is 0.002% of Ireland's 2030 non-ETS target of 27.7 MtCO₂e. Industry, Transport, Waste and Electricity emissions associated with the GHG emissions for the Candidate Gathabawn Grid Connection are a minor fraction of the relevant 2030 sectoral emissions ceilings.

Turbine Life Cycle Assessment (LCA):

The Vestas V-136 4.5 MW turbine has been selected for proposed Gathabawn Windfarm. 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 for this assessment.

According to the Vestas LCA report (Vestas, 2022) and discussed in [Appendix 12.1 Section A12.1.3](#), the carbon footprint is 5.14 g CO₂e/kWh, calculated over a 20-year operating period. The **energy payback period** – i.e. the period after which the amount of electrical energy generated is equal to the primary energy consumption for the manufacturing of the wind turbine **is 6.1 months**.

Additionally, the **overall recyclability of modern multi-megawatt sized turbines is c.87%**. The components contributing primarily to recyclability relate to metal parts manufactured from iron, steel, aluminium and copper, where the turbine consists of around 90% metal. This high recyclability percentage will contribute to the circular flow of material resources at disposal, following decommissioning.

Operational Phase: Production of Renewable Energy – Electricity:

The Gathabawn Windfarm is a climate mitigation project – its purpose is to generate renewable energy from the wind. The Gathabawn Windfarm is a **54MW windfarm** which will contribute to Ireland's **onshore renewable electricity (RE-E) target of at least 9GW of onshore wind RE-E capacity by 2030**, and will assist in the Climate Action Plans goal of producing up to 80% renewables for the electricity grid by 2030.

Annually, the proposed Gathabawn Windfarm will provide **c.150,000 MWhrs of renewable electricity (RE-E)**. 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 production of 150,000 MWhrs of RE-E will result in GHG emissions savings of 38,250 tonnes CO₂ per year based on the energy intensity of the Irish electricity generation mix in 2024 of 255 gCO₂e/kWh (and not allowing for construction stage GHG emissions). Alternatively, the 150,000 MWh of RE-E generated is equivalent to an emissions savings of 28,864 tonnes of CO₂e each year based on the more conservative provisional figure of

197.8 CO₂/kWh for the energy intensity of the Irish electricity generation mix in 2025 (Source: SEAI Energy in Ireland 2025 Report) and once GHG emissions from construction have been subtracted.

In relation to Climate Budgets, the Electricity sector has a 75% reduction requirement and a 2030 emission ceiling of 3MtCO₂e. **The carbon offsets associated with the Gathabawn Windfarm would equate to c. 1% of the 2030 Electricity sector carbon budget of 3 MtCO₂e.**

Significance of Effects (pre mitigation):

The significance criteria set out in PE-ENV-01104 (TII, 2022) and Table 1 of [Appendix 12.1](#), have been used to assess the impact of the proposed development GHG emissions on climate. 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.

In the absence of mitigation, construction phase GHG emissions are significant. Mitigation measures are outlined below in order to reduce GHG emissions for the construction of the Gathabawn Windfarm and Other Elements.

The operational phase of the proposed development 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**.

Impact Magnitude	Construction Phase: Direct, long-term, negative Operational Phase: Direct, long-term, positive	Impact Significance: (pre-mitigation)	Construction Phase: Significant Operational Phase: Not Significant
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Mitigation Measures:

Design	Use of the existing road/track networks as much as possible to minimise the amount of land-use change needed for the development
Design	Avoidance of forestry areas, and minimising requirements for tree or hedgerow felling
Design	All fill materials will be sourced on-site reducing the requirement for transportation of this material from external quarries. This includes c.17,000m ³ of topsoil and c.47,000m ³ of aggregates for the proposed Gathabawn Windfarm. This results in an avoided 646 tCO ₂ e which would otherwise have resulted from transport of this material. The Candidate Grid Connection will use c.14,000m ³ of site-won material and results in an avoidance of 90 tCO ₂ e which would otherwise have resulted from transport of this material from offsite sources. These calculations are based on an assumed 25km travel distance and 20t HGV loads.
Design	Use of limestone at the Ballylehaun section of the windfarm site to provide capping stone for this section of the windfarm.
Design	Use of two local quarries for concrete supply and for capping stone for the Ballyring section to minimise road transport emissions
WM33 GM30	<u>Excavation of Materials</u> : The excavation of earth materials during the construction stage will be kept to a minimum. The excavation of materials will be completed in accordance with best practices for the management and treatment of such materials. (i.e. British Standards BS6031:2009 Code of Practice for Earthworks, and MAFF (2000) Good Practice for Handling Soils).
GM55	<u>Noise and emissions from plant/machinery</u> : Plant and machinery will <u>not be permitted to idle</u> . Machinery used intermittently will be shut down when not in use. Any plant operating within 50m of the River Nore or within 200m of a bat roost (if any) will be fitted with noise dampeners and an acoustic enclosure or portable screen placed between the source of noise and the sensitive receptor.
WM65	<u>Plant and machinery will not be permitted to idle</u> and any plant operating within 200m of a bat roost (if any) will be fitted with noise dampeners and surrounded by an acoustic enclosure or portable screen.

WM76 GM64	<u>Noise and emissions from plant/machinery:</u> Plant and machinery will not be permitted to idle. Machinery used intermittently will be shut down when not in use. The best means practicable, including proper maintenance of plant, will be employed to minimise the GHG emissions and noise produced by on-site operations. All vehicles and plant will be fitted with effective exhaust silencers. Noise dampeners will be fitted where required. To protect residential amenity, if any plant/machine is required to operate before 07:00hrs or after 19:00hrs Monday to Friday, or before 08:00hrs or after 13:00hrs on a Saturday, then it will be surrounded by an acoustic enclosure or portable screen.
WM38 GM83	<u>Waste Management:</u> waste arising during construction works will be carried out according to a Waste Management Plan. The main contractor will engage an appropriately licensed waste company to deal with all its wastes during construction. The Waste Management Plan is included in the Construction Environmental Management Plan. The Construction Contractor will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
WM12 1	<u>Waste Management:</u> waste arising during the operation stage will be carried out according to a Waste Management Plan. An appropriately licensed waste company will be contracted to deal with all windfarm wastes. The Waste Management Plan will be included in the Environmental Management Plan for the operational project. The Asset Manager will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
WM13 7	<u>Waste Management:</u> waste arising during the decommissioning stage will be carried out according to a Waste Management Plan. An appropriately licensed waste company will be contracted to deal with all decommissioning wastes. The Waste Management Plan will be included in the Environmental Management Plan for the decommissioning stage. The Asset Manager will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
WM39 GM84	<u>Reduction in Embodied Carbon:</u> Where feasible, standard concrete containing Portland cement will be replaced 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.
WM40 GM85	<u>Reduction in Embodied Carbon:</u> Procurement contracts will ensure that material choices with lower associated embodied carbon relative to standard construction materials are considered favourably during the tender process for the wind farm.

Effectiveness of Mitigation and Monitoring Measures - Significance of Effects (Post mitigation):

The proposed development will emit GHG emissions during the construction stage which will have a negative impact on climate. The mitigation measures outlined above are proposed in order to reduce GHG emissions for the construction of the Gathabawn Windfarm and Other Elements. With mitigation in place, construction phase GHG emissions will be direct, long-term, negative, slight and not-significant.

Although the construction phase has a negative, not-significant impact on the climate, the operational phase has a more substantial positive, not-significant impact on the climate. The operational phase of the proposed development positively contributes to Ireland's GHG trajectory to net zero by 2050 and will result in GHG emission reductions through the production of renewable electricity. As discussed, the carbon payback for similar wind turbines is 6.1 months, therefore across the 35-year lifespan of the turbines, the positive impact far outweighs the adverse.

As per the TII significance criteria in **Table 2 of Appendix A12.1**, the proposed development is considered 'beneficial' as the project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentrations.

However, the proposed development does not meet the additional TII significance criteria of:

- 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.

Therefore, the impact is considered beneficial and not-significant rather than 'significant beneficial'. The proposed development complies with existing policy requirements and directly contributes to the CAP25 target of 9GW of onshore renewable energy. Additionally, the proposed development is fully aligned with the 2050 net-zero trajectory.

In accordance with the EPA Guidelines (EPA, 2022), the effects of the whole Gathabawn Windfarm project GHG emissions on Climate is **direct** due to its presence, **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 Gathabawn Windfarm project is **not-significant**.

The consistency of the Gathabawn Windfarm with the Climate Act is examined in [Appendix 12.2: Consistency of Gathabawn Windfarm with Section 15 of the Climate Act](#).

Residual Impact Significance (*post-mitigation*):

Direct, long-term, positive, slight, not significant

The above listed mitigation measures are included in the [Environmental Management Plan for the whole Gathabawn Windfarm project](#).

EIAR 12.5 Cumulative Effects with Other Projects

The 2022 ISEP guidance states that *“When considering the cumulative assessment, all global cumulative GHG sources are relevant to the effect on climate change. As a result, the effects of GHG emissions from specific cumulative projects should not be individually assessed. This is due to the fact that there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other”*.

However, it is noted that the other projects within the cumulative study areas studied in the other topic chapters of the EIAR include a number of renewable energy projects, including the operational Lisdowney Lisheen, Bruckana, Foylatalure, Cnoc and Ballybay Wind Farms, the Pinewood and Farranrory Wind Farms which are currently under construction, the consented Ballynalacken and Briskalagh Wind Farm, the proposed Seskin and Littleton Wind Farms, the potential Killoshulan Wind Farm and the solar farms in the Ballyragget, Moyne and Kilkenny areas, all of which will contribute significantly and positively to Irelands targets under the Climate Action Plan.

EIAR 12.6 Summary Conclusion

CLIMATE CHANGE:

Greenhouse Gases (GHGs) are altering the Earth's atmosphere resulting in a 'Greenhouse Effect'. The release of GHGs as a result of burning fossil fuels, has been one of the leading factors in the creation of this 'Greenhouse Effect'.

Addressing climate change requires two types of responses: adaptation and mitigation. Climate mitigation is about reducing emissions of greenhouse gases to limit the amount of warming that happens over the coming decades. **The Gathabawn Windfarm is a climate mitigation project.**

Ireland is committed to UN and European climate agreements, and Ireland's 2021 Climate Act provides for a 51% reduction in GHGs by 2030 compared to 2018 levels.

Successive Climate Action Plans have set targets to increase the proportion of renewable electricity on the system up to 80% by 2030 with a target of 9GW from onshore wind, which is a doubling of the existing installed capacity.

Furthermore, the Electricity sector has a 2030 emission ceiling of 3 MtCO₂e which is a 75% reduction compared to 2018 levels.

While there will be some **GHG emissions** associated with the manufacture, transportation, construction, maintenance, and decommissioning of the windfarm and the wind turbines, these emissions will be **offset once the development is operational through the production of renewable electricity**. With the potential for emissions from the turbines to be offset within 6.1 months.

Once the windfarm is operational the production of **c.150,000 MWh of renewable electricity per annum** will offset the production of an equivalent amount of electricity from conventional fossil fuel electricity generation.

The Gathabawn Windfarm is a **54MW windfarm** which will contribute to Ireland's **onshore renewable electricity target of at least 9GW of onshore energy by 2030**, and will assist in successive Climate Action Plans goals of producing up to 80% RE-E for the grid by 2030. The proposed Gathabawn Windfarm is considered an essential project as without its contribution to the 9GW renewable energy target the CAP25 target and policy is further from being achieved.

The annual production of 150,000 MWhrs of renewable energy-electricity will result in GHG emissions savings of 38,250 tonnes CO₂ per year based on the energy intensity of the Irish electricity generation mix in 2024 of 255 gCO₂e/kWh (and not allowing for construction stage GHG emissions). Alternatively, the 150,000 MWh of RE-E generated is equivalent to an emissions savings of 28,864 tonnes of CO₂e each year based on the more conservative provisional figure of 197.8 CO₂/kWh for the energy intensity of the Irish electricity generation mix in 2025 (Source: EPA, 2025) and once GHG emissions from construction have been subtracted, this **equates to c. 1 % of the 2030 Electricity sector carbon budget of 3 MtCO₂e**. The Gathabawn Windfarm will have a beneficial impact on the climate through this renewable energy production.

The operational phase of the proposed development positively contributes to Ireland's GHG trajectory to net zero by 2050 and will result in GHG emission being avoided through the production of renewable electricity.

As per the TII significance criteria in **Table 2 of Appendix A12.1**, the proposed development is considered '**beneficial**' as the project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentrations. However, the proposed development does not meet the additional TII significance criteria of:

- 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.

Therefore, the impact is considered beneficial and not-significant rather than 'significant beneficial'. The proposed development complies with existing policy requirements and directly contributes to the CAP25 target of 9GW of onshore renewable energy. Additionally, the proposed development is fully aligned with the 2050 net-zero trajectory. As mentioned the proposed Gathabawn Windfarm is considered an essential project as without it's contribution to the 9GW renewable energy target the CAP25 target and net-zero goal is further from being achieved.

Although the construction phase has a negative, not-significant impact on the climate, the operational phase has a more substantial positive, not-significant impact on the climate. As discussed, the carbon payback for similar 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 effects of the whole Gathabawn Windfarm project GHG emissions on climate is **direct** due to its presence, **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 Gathabawn Windfarm project is **not-significant**.

EIAR 12.7 Glossary, List of Abbreviations

Glossary of Terms

Term	Definition
Carbon Dioxide equivalent	This is a term for describing different greenhouse gases in a common unit. Given as CO ₂ e or CO ₂ eq. For any quantity and type of greenhouse gas, CO ₂ e signifies the amount of CO ₂ which would have the equivalent global warming impact.
Embodied emissions	These are defined as the energy consumed by all of the processes associated with the production of a development, from the mining and processing of natural resources to manufacturing, transport and product delivery.
Gathabawn Windfarm	Twelve wind turbines are proposed for two areas – seven turbines in the Ballylehaun area and five turbines in the Ballyring area. In addition to the turbines and their hardstanding areas, the windfarm also includes site access roads, two Control Buildings; a met mast, underground cabling, temporary works to facilitate turbine deliveries, and other associated and ancillary works.
Candidate Gathabawn Grid Connection	Underground cabling between the Ballylehaun and Ballyring Areas (Ballylehaun-Ballyring UGC), underground cabling from the Ballyring Area (from Ballyring Control Building) to a new substation at Parksgrove (Ballyring-Parksgrove UGC), the Parksgrove Substation, and underground cabling from the substation to the existing Eirgrid Ballyragget Substation in Moatpark (Parksgrove-Moatpark UGC).
Proposed Gathabawn Windfarm	Gathabawn Windfarm comprising: • Windfarm of twelve (12) wind turbines and associated foundations and hardstanding areas, with the turbines located on two upland areas – 7 no. turbines at the Ballylehaun Area and 5 no. turbines at the Ballyring Area of the Gathabawn Windfarm. In addition to the turbines, the windfarm development also includes site roads, 2 Control Buildings; 1 Met Mast; 1 LiDAR unit, underground cabling and haul route works between Ballylehaun and Ballyring. The windfarm is the main element of a whole Gathabawn Windfarm Project and this windfarm element is subject of this Planning Application. • The turbine rotor diameter size will be 136m for all turbines. Two turbine hub heights and tip heights are proposed - 82m hub height and 150m tip height for turbines T6, T7 and T9; and a 102m hub height and 170m overall tip height for all other turbines. • The proposed development also includes underground cabling between the Ballylehaun Section and the Ballyring Section; and temporary Haul Route Works at Coolcashin, Foyle South and Garrydague to facilitate the delivery of turbine components and cranes to the windfarm site. • The Proposed Gathabawn Windfarm is located in the townlands of Coolnacrutta, Glashare, Ballylehaun, Gorteennamuck, Coolcashin, Ballygowney, Rathlogan, Tentore, Ballyring Upper and Ballyring Lower in north County Kilkenny.
Other Elements of the whole Gathabawn Windfarm project	The other elements of the whole Gathabawn Windfarm project include underground cabling to a new Substation in Parksgrove townland near Ballyragget, which is circa 7km east of the windfarm site and underground cabling from the new Substation to the nearby existing Eirgrid Ballyragget Substation, in Moatpark townland. These other elements are <u>not</u> included as part of this Planning Application, but are considered in this EIA Report in order to facilitate the evaluation of the whole project. These other elements will be subject to a separate Planning Application, at a future date
Mt	Megatonne. 1 Mt = 1 Million Tonnes

List of Abbreviations

Abbreviation	Full Term
CAP	Climate Action Policy
CO ₂ e / CO ₂ eq	Carbon Dioxide equivalent
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
LULUCF	Land Use, Land Use Change and Forestry
MtCO ₂ e	Million tonnes of Carbon Dioxide equivalent
MW	Megawatt
RE-E	Renewable Energy - Electricity

EIAR 12.8 Reference List

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Transport Infrastructure Ireland (2025) *GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document*.

Vestas Wind Systems A/S (2022) *Life Cycle Assessment of Electricity Production from an onshore V136-4.2 MW Wind Plant*, available: https://www.vestas.com/content/dam/vestas-com/global/en/sustainability/reports-and-ratings/lcas/LCA%20of%20Electricity%20Production%20from%20an%20onshore%20V136-4.2MW%20Wind%20Plant_Final.pdf.coredownload.inline.pdf [accessed Sept 2026]

EIAR 12.9 List of Figures**FIGURES (overleaf)**

No Figures

EIAR 12.10 List of Appendices**APPENDICES (overleaf)**

Appendix 12.1	Methodology for the evaluation of Climate
Appendix 12.2	Consistency of Gathabawn Windfarm with Section 15 of the Climate Act

Figures

Appendix to Chapter 12: Climate

Appendix 12.1: Methodology for the evaluation of Climate

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A12.1 Methodology Applied during the preparation of Chapter 12: Climate

A12.1.1 Legislation, Regulations & Guidance Documents

The following legislation, regulations and policy are relevant to Climate and have been adhered to in this EIA Report:

- EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources
- Effort Sharing Regulation (EU 2018/842)
- Climate Action Plan 2025 (CAP25) and previous CAPs (Government of Ireland, December 2025)
- European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment
- Government of Ireland White Paper ‘Ireland’s Transition to a Low Carbon Energy Future 2015-2030’
- Climate Action and Low Carbon Development (Amendment) Act 2021 (Government of Ireland, 2021)
- Carbon Budgets (Department of the Taoiseach, 2022) available: <https://www.gov.ie/en/publication/9af1b-carbon-budgets/>

The following guidelines, listed below, have been considered during the preparation of this chapter:

- Transport Infrastructure Ireland (2022) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document
- Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment (IEMA)) (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance
- Institute of Sustainability and Environmental Professionals (ISEP) (2026) Assessing Greenhouse Gas Emissions and Evaluating their Significance Edition 2.1, April 2026 with Supplementary Guidance
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

A12.1.2 Methodology Used for Baseline Environment and Impact Evaluations

The Climate impact assessment is based on the methodology set out within 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). This is the first published national guidance document in relation to climate assessments. While the methodology set out within this document is specific to TII infrastructure projects the assessment approach can be applied to any development that may impact climate. The TII guidance is based on the Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment (IEMA)) guidance document *Assessing Greenhouse Gas Emissions and Evaluating their Significance* (ISEP, 2022).

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

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

This environmental topic chapter examines the impact of the Proposed Gathabawn Windfarm on the environmental factor Climate, through the Greenhouse Gas Emissions Assessment.

The Climate Change Risk Assessment is included in [Chapter 5: Description of the Development, Section EIAR 5.11 Vulnerability to Major Accidents, Natural Disasters, Climate Change](#).

A12.1.3 Methodology for Greenhouse Gas Emissions Assessment (GHGA)

The assessment of GHG emissions resulting from the proposed project over the various lifetime phases is quantified using the categories described in BS EN 15978. These are:

- **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 transforming 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 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.

Construction Phase GHGA

PE-ENV-01104 (Transport Infrastructure Ireland, 2022) recommends the calculation of GHG emissions and embodied carbon using the TII Online Carbon Tool or an appropriate alternative tool. 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 purpose of the assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP25 goal of achieving carbon neutrality by 2050.

The TII Online Carbon Tool has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool uses emission factors from recognised sources including, but not limited to:

- Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database
- Circular Ecology ICE v4.0 ICE DB Advanced V4.0

The tool can be applied to a variety of developments, not just road or rail and aligns with PAS 2080.

The assessment commences with the high-level design, through the pre-construction (site clearance) stage, followed by the assessment of the embodied carbon associated with all materials used in the construction of the development, the emissions during the construction phase and additionally emissions related to waste generated during the construction phase. Operational phase emissions associated with the proposed development include operational wastes and their transport. The carbon calculations also account for any land-use changes due to site clearance works or replanting works. This includes the loss of the carbon sink potential of the land as a result of any required forestry felling. Additionally, the replanting of any forestry is also accounted for and the potential return of the carbon sink.

The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used or activity undertaken. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent).

Information on the material quantities, site activities, land clearance, construction traffic, construction fuel usage and water usage were input into the carbon tool by the project team. This information was used to determine an estimate of the GHG emissions associated with the development during the construction phase, operational phase and decommissioning phase where relevant. Detailed information regarding all of the proposed materials and activities was not available at the time of this assessment and will be specified at the detailed design stage. Best estimates have been used in this assessment to provide an estimate of the GHGs associated with the proposed development. GHG emissions associated with the proposed grid connection have also been quantified using this methodology.

The predicted emissions for the proposed development are annualised over the assumed 35-year lifespan and then compared to the relevant National GHG targets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets.

Turbine Lifecycle Assessment (LCA)

The Vestas V-136 4.5 MW turbine has been selected for proposed Gathabawn Windfarm. The Lifecycle Carbon Assessment (LCA) for the Vestas V136-4.2 (Vestas, 2022)¹ wind turbine has been obtained from public information published by Vestas and used as a proxy for this assessment.

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 gCO₂e/kWh generated.

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.

Operational Phase GHGA

Operational GHG emissions from maintenance of site roads, staff vehicles and operational wastes were quantified using the TII carbon tool and the same methodology as the construction phase.

The savings in CO₂ emissions arising from the production of electricity using renewable sources were compared against CO₂ emissions from electricity production using non-renewable sources. The calculations were carried out using SEAI published emission rates from non-renewable energy sources (SEAI, 2024). This total CO₂ saving annually and over the lifespan of the project relative to CO₂ emissions from power generation was determined.

During the operational phase there will be no likely significant negative GHG emissions from the operation of the wind turbines or grid connection. 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 development relative to fossil fuel energy production, the GHG emissions produced by a typical fossil fuel plant generating the equivalent amount of

¹ Vestas (2022) Lifecycle Assessment of Electricity Production from an Onshore V136-4.2MW wind plant. Available at: https://www.vestas.com/content/dam/vestas-com/global/en/sustainability/reports-and-ratings/lcas/LCA%20of%20Electricity%20Production%20from%20an%20onshore%20V136-4.2MW%20Wind%20Plant_Final.pdf.coredownload.inline.pdf [Accessed September 2026]

energy (based on the carbon intensity of electricity generation in Ireland) has been calculated. The GHG emissions associated with an equivalent fossil fuel plant generating 150,000 MWh of energy will include emissions of CO₂, nitrous oxide (N₂O) and methane (CH₄). The most recent (2025) figure for carbon intensity of electricity generation in Ireland is 197.8 gCO₂e/kWh (SEAI, 2025). The CO₂ equivalent emissions of N₂O and CH₄ have been calculated using the global warming potentials in 6th Assessment Report IPCC Guidelines.

Decommissioning Phase GHGA

Vehicles related to the decommissioning phase could give rise to CO₂ 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 **Chapter 5 Description of the Development** 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 V136 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 above) and is typically a small proportion of the GHG emissions associated with a wind farm project. The impact of decommissioning on the proposed development's GHG emissions is therefore scoped out from further assessment.

A12.1.4 Methodology for determining the significance of impacts

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.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022) is based on the Institute of Sustainability and Environmental Professionals (ISEP) guidance (ISEP, 2022). In accordance with ISEP and TII guidance, the significance of effect of GHG emission resulting from a given project is based on its contribution to sectoral and national carbon budgets and whether it supports Ireland's CAP25 objective of achieving carbon neutrality by 2050, by 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 will 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 climate situation and potential exceedance of the 1.5°C Paris Agreement target. The 2026 ISEP Supplementary Guidance 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 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 examples of significance criteria are detailed in Table 1 below.

Table 1: ISEP Examples of GHG Significance Criteria

Effects	Significance level	Description
Significant	Major adverse	The project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to Ireland's trajectory towards net zero.
	Moderate adverse	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to Ireland's trajectory towards net zero.
Not Significant	Minor adverse	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the Ireland's trajectory towards net zero.
	Negligible	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Significant	Beneficial	The project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

Source: Box 3 ISEP (2026) *Assessing Greenhouse Gas Emissions and Evaluating their Significance Edition 2.1, April 2026 with Supplementary Guidance*

The ISEP points set out above and the TII definitions set out in Table 2 below are well aligned but the ISEP 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 of assessing significance and provide accountability, the criteria

outlined in PE-ENV-01104 (TII, 2022) (which are based on the 2022 ISEP guidance and are 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'), 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 2: Greenhouse Gas Assessment Significance Criteria

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; • 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.

Appendix to Chapter 12: Climate

Appendix 12.2: Consistency of Gathabawn Windfarm with Section 15 of the Climate Act

Section 15 of The Climate Act

Section 15(1) of the Climate Action and Low Carbon Development Act 2015, as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021, provides that "A *relevant body* [ie, a *planning authority*] shall, in so far as practicable, perform its functions in a manner consistent with:

- a) the most recent approved climate action plan,
- b) the most recent approved national long term climate action strategy,
- c) the most recent approved national adaptation framework and approved sectoral adaptation plans,
- d) the furtherance of the national climate objective, and
- e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

The 2015 Climate Act as amended by the 2021 Climate Act are together referred to as the 'Climate Act' within this report. The following Section 15 Report sets out how the proposed Gathabawn Windfarm is consistent with all aspects of each of the plans, strategy and objectives detailed at (a) to (e) of section 15(1) of the Climate Act.

Table 1- 3 Gathabawn Windfarm consistency with Section 15 of the Climate Act

Climate Act Section 15(1)(a) – (e)										
(a) the most recent approved climate action plan,	Climate Action Plan 2025 (CAP25) is the most recent approved climate action plan, published in April 2025. CAP25 is the 2025 statutory annual update to Ireland's Climate Action Plan under the Climate Act. Aspects of CAP25 relevant to the Renewable Electricity Sector Section 11. Electricity – Key Targets (budget cap) Electricity Section Carbon Budget 1 (2021-2025): 40 MtCO₂e Electricity Section Carbon Budget 2 (2026-2030): 20 MtCO₂e These carbon budget caps to be achieved by (among other measures) through <table><tr><th>National Targets</th><th>2025</th><th>2030</th></tr><tr><td>Renewable Electricity Share</td><td>50%</td><td>80%</td></tr><tr><td>Onshore Wind</td><td>6 GW</td><td>9 GW</td></tr></table> In 11.1 ‘State of Play’ CAP25 states <i>“The electricity sector has one of the smallest carbon budgets, with a ceiling of 40 MtCO₂eq for the first budget period (2021-2025), equating to an average of 8 MtCO₂eq. per annum and the steepest decline trajectory (-40%) across all sectors. This represents an immense challenge as the sector not only has a requirement to reduce emissions, but also to meet the increasing electricity demand required for our economy, ensuring the energy security of the State, and supporting those sectors which are decarbonising through electrification.”</i> In 11.2.1 ‘Progress on Actions’ CAP25 states <i>“Accelerate Renewable Energy Generation - A renewables-led system is at the core of Ireland’s plan to radically reduce emissions in the electricity sector, protect our energy security,</i>	National Targets	2025	2030	Renewable Electricity Share	50%	80%	Onshore Wind	6 GW	9 GW
National Targets	2025	2030								
Renewable Electricity Share	50%	80%								
Onshore Wind	6 GW	9 GW								

Climate Act Section 15(1)(a) – (e)	
	<i>and ensure our economic competitiveness. This requires the accelerated and increased deployment of new renewable electricity generation capacity and related infrastructure.”</i> <u>In 11.3 ‘Identifying Actions in the Electricity Sector’ CAP25 states “The Accelerating Renewable Electricity Taskforce (ARET) was established to identify and prioritise the required policies to achieve our onshore renewable electricity targets. The ARET published its Implementation Plan in June [2024¹], which sets out the roadmap for the actions to be taken in the near-term to help meet our 2030 targets.</u> The ARET Implementation Plan identified three pillars of renewables delivery. Under the Planning and Reporting pillar, the planning policy is to “<i>Ensure that the statutory planning policy hierarchy supports the delivery of the national renewable electricity targets for onshore wind and solar PV and effectively translates the national targets for same to the regional and local development plan tiers</i>”. Consistency of Gathabawn Windfarm with these CAP25 aspects - Aspects identified relate to i) the acceleration of the generation of electricity from renewable sources and in particular onshore wind energy; and ii) the prioritising of achieving renewable electricity capacity targets for onshore wind (9GW by 2030 – a doubling of current capacity). - Proposed Gathabawn Windfarm is a c.54MW capacity onshore windfarm which is predicted to produce 150 million kilowatt hours of renewable electricity per annum which will offset 38,250 tonnes of CO₂e per annum that would otherwise be emitted if these kWh were instead generated by fossil fuels (e.g. gas, coal and oil), based on the energy intensity of the Irish electricity generation mix of 255g CO₂/kWh. This is the equivalent to planting 31km² of forestry or of switching 22,238 cars from diesel to electric vehicle. The purpose of Gathabawn Windfarm is completely aligned with the CAP25 policy to achieve carbon budget targets through the increase in renewable electricity share of the national electricity output and to increase the installation of onshore wind capacity. Additional electricity generation from indigenous renewable sources will also support the challenge to to meet the increasing electricity demand required for our economy, ensuring the energy security of the State, and supporting those sectors which are decarbonising through electrification. - The proposed Gathabawn Windfarm will also contribute to the acceleration and increased deployment of new renewable electricity generation capacity and related infrastructure because there are grid connection possibilities

¹ <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/accelerating-renewable-electricity-taskforce/>

Climate Act Section 15(1)(a) – (e)	
	at Ballyragget which is within a reasonable distance from the windfarm site. Once the Planning Application is submitted an application will be made to Eirgrid to connect to Ballyragget Substation • The proposed Gathabawn Windfarm is a renewable energy development the purpose of which is to generate renewable electricity from a renewable non-fossil resource and is compatible with the Renewable Energy Directive (RED III) to promote the generation of energy from renewable sources. • Gathabawn Windfarm is a renewable energy development for the purposes of the Irish Planning Code. In conclusion, based on the information provided in this Section 15 Report and in the planning application as whole, the foregoing analysis demonstrates that An Coimisiún Pleanála can be satisfied that, by granting permission for the proposed development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15 (1) (a).
(b) the most recent approved national long term climate action strategy	Ireland's Long-term Strategy on Greenhouse Gas Emissions Reduction (the Strategy) published in April 2023 and last updated in August 2024, is the first long-term climate action strategy prepared under the Climate Act². It is the most recent approved national long term climate action strategy. Aspects of the Strategy relevant to Renewable Electricity Sector Extracts from Section 8. Pathways to Climate Neutrality by Sector - 8.1 Electricity <u>In S.8.1 'State of Play' the Strategy states:</u> In 2022, electricity accounted for 16.6% of Ireland's greenhouse gas (GHG) emissions. Approximately 60% of Ireland's electricity came from fossil fuel generation (oil, gas, peat and coal). Thirty-eight per cent (38.6 %) of Ireland's electricity was generated from renewable sources, with the majority of this through onshore wind generation. The Strategy states that electricity will be a key enabler in decarbonising of the economy, primarily through increased electrification of other sectors. To reach Ireland's climate neutral target, the electricity sector will need to deliver its own reduction in emissions and support the decarbonisation of the transport and built environment sectors. <u>In S.8.1 'Pathway to 2030' the Strategy states:</u> Under the sectoral emissions ceilings agreed by the Government on 28 July 2022, the electricity sector has been set a binding carbon budget of 60 MtCO₂ eq. over the period from 2021 to 2030, which corresponds with a 75% reduction in greenhouse gas emissions by 2030, relative to the baseline year of 2018.

² <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/long-term-strategy-on-greenhouse-gas-emissions-reductions/>

Climate Act Section 15(1)(a) – (e)	
	The Strategy states that Climate Action Plan 2024 (CAP24) provides an integrated energy strategy for achieving the ambitious emissions reductions required under the sectoral emissions ceiling for electricity. The central element of CAP24 (and the current CAP25), is to deliver 80% renewable electricity generation by 2030. This will involve a dramatic reduction in fossil fuel generation and increasing renewable electricity. Section 3.1 of CAP25 states “CAP25 is to be read in conjunction with CAP24 and takes account of key developments in the policy and evidence base in the previous year. This is intended to facilitate a focus on the delivery of outstanding actions from CAP24”. <u>In S.8.1 ‘Pathway to Climate Neutrality by 2050’ the Strategy states:</u> Meeting Ireland’s 2050 climate neutrality target will require full decarbonisation of the power sector. In order to achieve this, Ireland will need to achieve near zero emissions from 2035. One of the key drivers of a pathway to 2050 carbon neutrality is a major shift to 80% renewables (incl. 14 GW wind, 8 GW solar). Regarding emission reduction measures and milestones to 2050, the Strategy states that the core measures necessary to deliver a net zero emissions electricity sector are to deliver significantly higher renewable power capacity mostly through onshore wind, offshore wind, and solar PV. To achieve the required increase in renewable electricity capacity, installation rates of wind and solar power will need to significantly accelerate. CAP24 (and CAP25) set a number of major milestones including to deliver total installed capacity of at least 5 GW of offshore wind capacity and 9 GW of onshore wind and 8GW of solar capacity by 2030. Consistency of Gathabawn Windfarm with these Strategy aspects A grant of permission for Gathabawn Windfarm will increase renewable electricity capacity in the country. Gathabawn Windfarm is an onshore windfarm generating electricity from the power in the wind, which is a renewable resource. In conclusion, based on the information provided in this Section 15 Report and in the planning application as whole, the foregoing analysis demonstrates that An Coimisiún Pleanála can be satisfied that, by granting permission for the proposed development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15 (1) (b).

Climate Act Section 15(1)(a) – (e)	
(c) the most recent approved national adaptation framework and approved sectoral adaptation plans	The most recently approved – National Adaption Framework (NAF) 2024 which was published on 5 June 2024³. Aspects of NAF 2024 relevant to Renewable Electricity Sector In NAF <u>Appendix 3: Sectoral impacts and opportunities of climate change</u>, the potential impacts on the Electricity and Gas Network, associated with Climate Change and relevant to onshore wind are listed as; • <i>Floods may damage electricity and gas transmission systems, and coastal erosion could impact infrastructure.</i> • <i>Increased wind variability may require backup generation or storage, and strong winds may lead to turbine shutdown or damage.</i> Additionally, NAF 2024 requires the development of Sectoral Adaptation Plans (SAPs), including for the Electricity and Gas Networks. The Electricity & Gas Networks Climate Change Sectoral Adaptation Plan (EGN SAP 2025) document was published in November 2025. The EGN SAP 2025 focuses on climate adaption. Relevant to on-shore windfarms, risks were identified for the electricity generation subsector, including • <i>disruption to electricity generation and damage to assets is associated with extreme winds.</i> • <i>periods of extreme temperature have coincided with decreased wind energy output during the hot, calm weather</i> • <i>windstorms have resulted in damage to the electricity distribution network (e.g. overhead lines and poles).</i> Proposed Gathabawn Windfarm in relation to NAF 2024 and EGN SAP 2025 The vulnerability of Gathabawn Windfarm to natural disasters and climate change is evaluated in <u>EIAR Chapter 5.19 Vulnerability to Major Accidents, Natural Disasters and Climate Change</u>. The evaluation is carried out in accordance with Department of the Environment, Heritage & Local Government (2010) <i>A Guide to Risk Assessment in Major Emergency Management</i> and taking account of TII <i>Climate Guidance for National Roads, Light Rail, and Rural Cycleways (Offline & Greenways) - Overarching Technical Document</i> (PE_ENV-01104 December 2022). It is evaluated that; • the likelihood of the Gathabawn Windfarm project being affected by flooding or extreme rainfall events or causing flooding to occur, is <u>Extremely Unlikely</u>. The windfarm site is not in a mapped fluvial or pluvial flooding zone and the windfarm drainage system is designed to cater for high volumes of rainwater runoff.

³ <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/national-adaptation-framework-naf/>

Climate Act Section 15(1)(a) – (e)	
	the likelihood of the Gathabawn Windfarm project being affected by storms is considered to be <u>Extremely Unlikely</u>. The turbines will be designed in accordance with the IEC 61400 standard to ensure the structures are appropriately engineered against damage from hazards (including high winds) during the planned lifetime of the structures. In addition, before installation, the turbine supplier will also carry out computerised wind flow models of the Gathabawn site, to ensure turbulence and fatigue loading is not exceeded. Regarding the requirement for backup storage, Gathabawn Windfarm will likely connect directly into a 110kV Transmission node at Eirgrid Ballyragget Substation. In response to unexpected events related to climate extremes, which may result in temporary turbine shutdown at Gathabawn Windfarm, the Transmission System has capacity to bring compensatory generation online (spinning reserve) at short notice. Spinning reserve is a critical part of the normal operating Transmission System which must continuously adapt to drops in supply or to surges in demand. Mitigating Aspects for Gathabawn Windfarm in the context of the NAF 2024 and EGN SAP 2025 Gathabawn Windfarm will likely connect to the 110kV transmission network at Eirgrid Ballyragget Substation. There are 3 No. large solar farms recently constructed in the vicinity of Ballyragget/Parksgrove which are also connected to the Eirgrid Ballyragget Substation. These will provide an alternative source of generation at the Ballyragget node during periods of high pressure when solar gain is high at the solar farms and lack of wind would limit wind generation. The Beaufort Scale classes a Force 12 storm with speeds in excess of 32m/s (or in excess of 117km/h) as Hurricane Force. The wind turbines which will be installed at the Gathabawn Windfarm site will be designed to withstand at least 60 m/s (215km/h). The windfarm cabling (including the grid connection cabling) will not be affected by storms, because the cables will be placed underground. Also the type of electrical apparatus and equipment which will be installed at both the new substation at Parksgrove and the Eirgrid Ballyragget Substation is designed to withstand exposure in the open countryside which will mitigate the supply impacts of extreme weather. In conclusion, based on the information provided in this Section 15 Report and in the planning application as whole, the foregoing analysis demonstrates that An Coimisiún Pleanála can be satisfied that, by granting permission for the proposed development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15 (1) (c).
(d) the furtherance of the national climate objective	The National Climate Objective is a legal commitment in the Climate Act to transition to a climate-resilient, biodiversity-rich, environmentally sustainable, and climate-neutral economy by the end of 2050. This is supported by an

Climate Act Section 15(1)(a) – (e)	
	interim target of a 51% reduction in greenhouse gas emissions by 2030 and a system of 5-year, economy-wide carbon budgets to guide this process. A grant of permission for Gathabawn Windfarm would be consistent with the furtherance of the national climate objective. As stated at (b) above 'A grant of permission for this renewable energy project would be consistent with the furtherance (<i>the process of helping something to develop, progress or advance</i>) of the national climate objective to transition to a carbon neutral economy by 2050. A grant of permission will ensure that the windfarm will be built and will contribute to a reduction in emissions from the generation of electricity in the country. Based on the energy intensity of the Irish electricity generation mix, Gathabawn Windfarm is predicted to directly offset 38,250 tonnes of CO₂e per annum through the avoidance of electricity being generated from fossil fuels. In conclusion, based on the information provided in this Section 15 Report and in the planning application as whole, the foregoing analysis of Section 15(1) (d) demonstrates that An Coimisiún Pleanála can be satisfied that, by granting permission for the proposed development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15 (1) (d).
(e) <i>the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State</i>	A grant of permission for Gathabawn Windfarm would be consistent with the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State. The raison d'être of Gathabawn Windfarm is the mitigation of greenhouse gas (GHG) emissions, through the generation of electricity from clean resources. Every kWh of electricity generated by a wind turbine without the emission of GHGs, offsets the generation of a kWh of electricity from fossil fuels which do emit GHGs. More than 60% of all greenhouse gases currently emitted are linked to the energy sector (United Nations 2020), making it the single most important sector to focus on, to combat climate change. Currently, only around 34% percent of the world's electricity generation is derived from renewable sources (Source: Global Energy Review 2026 (IEA)). To limit global warming to 1.5°C above pre-industrial levels, the share of renewables in the electricity mix must increase to 70-85% by 2050 (Intergovernmental Panel on Climate Change (IPCC) 2018). A rapid transformation away from fossil energy sources to renewables such as wind is pivotal if we are to meet the ambitions of the United Nations Framework Convention on Climate Change Paris Agreement. <u>Life Cycle Emissions from windfarms</u> Additionally, GHG emissions produced during the life cycle of turbines of the size proposed, will be offset by the renewable electricity generated during the first 8 months of the operational phase of the windfarm. The largest European wind turbine manufacturers – Enercon, Nordex and Vestas, prepare Sustainability Reports and Life Cycle Assessments (LCAs) for each of their wind turbine models. The LCAs establish the potential CO₂.eq emitted for the kWhs delivered to the grid over an operating lifespan of 20 years (25 years for

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	Enercon) and the potential payback period from the production of renewable electricity over the same period. A full life cycle includes raw materials, component production, the construction phase including access roads and turbine foundations, servicing/ maintenance during the operational lifetime including component replacement and decommissioning of the plant after 20/25 years. The Vestas V136 fits the turbine dimensions in this application and the Vestas V136-4.2MW LCA has been reviewed as a proxy for this assessment. According to the Vestas V136-4.2MW LCA, the carbon footprint of the Vestas V136-4.2MW is 5.14 g CO₂e/kWh, calculated over a 20-year operating period, which has been used as a proxy for this assessment to give an indication of the potential payback period for the proposed development. The energy payback period – i.e. the period after which the amount of electrical energy generated is equal to the primary energy consumption for the manufacturing of the wind turbine is 6.1 months. See Reference List at the end of the Climate Chapter 12 of this EIAR for LCA sources. Other environmental indicators assessed as part of the LCA for turbines of this size i.e V136, include return-on energy of the windfarm. Return-on energy provides an indication of the energy balance of the turbines, showing the relationship between the electrical energy output from the turbines and the energy requirement over the whole life cycle of the turbines (i.e. to manufacture, operation and disposal). The payback period is measured in months. Over the life cycle of the predicted production from the turbines at Gathabawn Windfarm, the turbines have the potential to return several times more energy back than consumed over the turbine life cycle. Additionally, the overall recyclability of the modern multi-megawatt wind turbines is c.87%. The components contributing primarily to recyclability relate to metal parts manufactured from iron, steel, aluminium and copper, where the turbine consists of around 90% metal. This high recyclability percentage will contribute to the circular flow of material resources at disposal, following decommissioning. <u>Adaptation to the effects of climate change</u> Given the location of typical onshore and offshore windfarm sites, wind turbines have been developed to withstand and produce energy under extreme weather conditions. This development has continued for the past 40 years as larger turbines are introduced, and grid integration has become ever more critical as more variable power like wind power, comes online. All the main turbine manufacturers quality test against climate variables such as extreme winds, drought length, extreme rainfall, sea level rises, heating and cooling, subsidence and flooding. Recommended materiality thresholds are set for each variable. Ireland's weather because of our geographical position and temperate climate would expect to be moderate within these variables, albeit experiencing more extreme events occasionally. The most likely extreme events in Ireland would be flooding from extreme rainfall and subsidence in areas with steep slopes where rock meets the surface and peat covers the terrain. Extreme winds are also likely events. <u>The primary mitigation measure for Gathabawn Windfarm to account for the effects of extreme weather causing subsidence or flooding, is the choice of the</u>

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	location for the windfarm. The Gathabawn Windfarm site was deemed suitable in the context of flooding because the site is not in a mapped fluvial or pluvial flooding zone. Regarding subsidence, site visits ground investigations, which included trial hole and borehole investigations found that there is no peat on-site. The wind farm site is typically flat to gently sloping agricultural lands with localised steeply inclined terrain, and the soil on site is shallow and stable with no evidence of slope failures or signs of instability at the proposed infrastructure locations. An examination of the GSI Landslide Susceptibility Mapping found that the site ranges from low to moderately high at the windfarm infrastructure. No previous failures have been recorded within 10km of the site. No stability issues are anticipated with the proposed design. <u>The primary mitigation measure for Gathabawn Windfarm to account for the effects of extreme winds</u> is the choice of turbine technology for the site. The turbines to be installed at Gathabawn Windfarm will be designed in accordance with the IEC 61400 standard to ensure the structures are appropriately engineered against damage from hazards (including high winds) during the planned lifetime of the structures. Before installation, turbine manufacturers also carry out computerised wind flow models of the windfarm site to ensure turbulence and fatigue loading is not exceeded. According to the Met Eireann Storm Centre (Met Eireann, 2026a), in January 2025, Storm Éowyn brought the strongest winds ever recorded in Ireland with gusts up to 184 km/h breaking an 80-year old record. Éowyn joins the list of storms that have observed Hurricane Force 12 wind speeds on land in Ireland, such as the ‘Night of the Big Wind’ storm in January 1839 (estimated wind speeds of 100 knots, Debbie in September 1961 (gusts up to 181 km/h), and more recently Darwin in February 2014 (gusts up to 159 km/h). During Éowyn, Ireland observed its highest sustained and gust wind speeds on record (142km/h and 184 km/h respectively). The Beaufort Scale classes a Force 12 storm with speeds in excess of 32m/s (or in excess of 117km/h) as Hurricane Force. The wind turbines which will be installed at the Gathabawn Windfarm site will be designed to withstand at least 60 m/s (215km/h). It is concluded in EIAR <u>Chapter 5: Section EIAR 5.11 Vulnerability to Major Accidents, Natural Disasters and Climate Change</u> that the likelihood of the Gathabawn Windfarm project being affected by or causing, flooding or landslip or being affected by storms is considered to be Extremely Unlikely. In conclusion, based on the information provided in this Section 15 Report and in the planning application as whole, the foregoing analysis demonstrates that An Coimisiún Pleanála can be satisfied that, by granting permission for the proposed development, it would, in so far as practicable, be performing its functions in a manner consistent with Section 15 (1) (e).
Overall, based on the above analysis of the different aspects of the statutory obligations under Section 15, it is considered that a grant of permission for the proposed Gathabawn Windfarm development would be in compliance with An Coimisiún Pleanála’s obligations under Section 15 as a whole.	