10. CLIMATE

10.1 Introduction

10.1.1 Background & Objectives

This chapter of the rEIAR describes and assesses the residual direct and indirect climate impacts of peat extraction and ancillary activities, at the Application Site. The climate impact assessments have been prepared for the Peat Extraction Phase, the Current Phase and the Remedial Phase of the Project. The baseline environment has been prepared with reference to published climate data from the Environmental Protection Agency (EPA) and Met Éireann. For the purposes of this assessment, while the activities assessed have occurred over the past decades, beginning in July 1988 and continuing to present day, impacts have been assessed against the most recently published climate guidance and policies which are likely more stringent than historical policies from previous years. Therefore, if it can be determined that, based on the most recent standards, no significant effects occurred as a result of the Project, it is therefore unlikely that significant impacts occurred based on historical standards.

10.1.2 Statement of Authority

This chapter of the rEIAR has been prepared by the following staff of AWN Consulting Ltd:

Ciara Nolan

Ciara Nolan (Principal Air Quality Consultant) holds a BSc (Eng) in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). Ciara has over 9 years of experience in the field of air quality consultancy. She has prepared the air quality and climate EIAR chapters for a range of developments including wind energy, industrial, pharmaceutical, data centre, residential and commercial.

This chapter was reviewed by Sarah Berry, Principal Climate Consultant at AWN Consulting Ltd. She holds a BSc(Hons) from the University of Leeds (Physical Geography). She is a Member of the Institute of Sustainability and Environmental Professionals. She has 9 years' experience in the areas of climate and sustainability. She has prepared climate EIAR chapters for developments including residential, industrial and renewable energy infrastructure, including wind farms.

10.1.3 Project Description

A full description of the Project is provided in Chapter 4 of the rEIAR. A brief summary pertaining to Climate for the Project Phases, as detailed in Section 4.2.1 in Chapter 4, is provided in the following sections.

10.1.3.1 Peat Extraction Phase: July 1988-June 2020

Site preparation works including the implementation of drainage channels commenced at the Application Site in 1935. This was followed by industrial-scale peat extraction which continued across the Application Site over the following decades. The Application Site was drained by July 1988 and peat extraction was ongoing across much of the Application Site at that point. Peat extraction ceased completely in June of 2020. The loss of carbon sink potential of the land was the primary impact to

climate as a result of the peat extraction and ancillary activities during the Peat Extraction Phase. The Peat Extraction Phase is described in detail in Sections 4.4 to Section 4.7 of Chapter 4: Project Description.

10.1.3.2 Current Phase: June 2020 to present day

Peat extraction ceased at the Application Site in June 2020. During the Current Phase, the activity on the Application Site is much reduced compared to when peat extraction was ongoing. Activities included the removal and transportation off site of any remaining peat stockpiles, which was completed in October 2021. As peat extraction has ceased on the Application Site, there are no further carbon losses and associated climate impacts associated with this element. However, the Application Site will remain a carbon source until rewetted or converted to an alternative land use. The Current Phase is described in detail in Section 4.7 and 4.8 of Chapter 4 Project Description.

10.1.3.3 Remedial Phase

It is a requirement of 'Condition 10 Cutaway Bog Rehabilitation' of the Integrated Pollution Licence (IPC) P0503-01 Licence that following decommissioning of use of all or part of their bogs, Bord na Móna Biomass Ltd (i.e., the Applicant), prepares (to the satisfaction of the EPA) and implements a Cutaway Bog Decommissioning and Rehabilitation Plan – see Appendix 4-2 for details. The appropriate management of water levels on the bogs, where possible, will aid in restoring the carbon store function and promote the carbon sink potential of the land.

There will be minimal use of diggers to assist in drain blocking activities, however, due to the short-term duration of the drain blocking activities and the low volume of machinery involved (likely 1 no. digger and 1 no. tractor per bog) impacts from exhaust emissions will be imperceptible. Ecologists and site managers will visit the Application Site regularly for monitoring purposes. The Remedial Phase is described in detail in Section 4.9 of Chapter 4 Project Description.

10.2 Methodology

10.2.1 EPA Description of Effects

The significance of effects of peat extraction and ancillary activities will be described in accordance with the EPA guidance document *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR), May 2022.* Details of the methodology for describing the significance of the effects are provided in Chapter 1: Introduction.

The effects associated with peat extraction and ancillary activities are described with respect to the EPA guidance in the relevant sections of this chapter.

10.2.2 Assessment Criteria

10.2.2.1 Relevant Climate Guidelines, Policies and Legislation

Climate related policy and legislation has developed considerably since 1988, the beginning of the assessment period for the Application Site. Climate targets and policies have become more stringent in recent years due to the increased awareness around climate change and the effects of climate change.

Legislation

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

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

Section 15 of the 2015 Act, sets out the duties imposed by certain bodies, including local authorities and An Coimisiún Pleanála. This section was amended by the 2021 Act and states:

> *"1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—*
>
> *(a) the most recent approved climate action plan,*
>
> *(b) the most recent approved national long term climate action strategy,*
>
> *(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,*
>
> *(d) the furtherance of the national climate objective, and*
>
> *(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."*

In relation to carbon budgets, the Climate Action and Low Carbon Development (Amendment) Act states '*a carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')*'. The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 10-1. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications will prepare and submit to government the maximum amount of Greenhouse Gas (GHG) emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published July in 2022 and are shown in Table 10-2.

The Application Site would fall under the heading of LULUCF (Land Use, Land Use Change, and Forestry), this does not yet have an allocated emissions ceiling. It should be noted that as sectoral emissions ceilings were published in 2022 they were not in place for the duration of the Peat Extraction Phase (1988 – 2020). Therefore, the peat extraction and ancillary activities during the Peat Extraction Phase did not require compliance with any sectoral emissions ceilings or carbon budgets.

Table 10-1 5-Year Carbon Budgets

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

Table 10-2 Sectoral Emission Ceilings 2030

Sector	Baseline (Mt CO_2e)	Carbon Budgets (Mt CO_2e)		2030 Emissions (Mt CO_2e)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, a new approach aligned with the EU LULUCF Regulation has been adopted.			
Total	**68**				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	**-**	**295**	**200**	**-**	**51**

Policy

National Policy

The latest iteration of the Government of Ireland's **Climate Action Plan** (CAP25) (Government of Ireland, 2025) was published in 2025 updating many of the suggested measures and actions required to achieve carbon budgets and sectoral emissions ceilings from CAP24 (Government of Ireland, 2024a). Both CAP24 and CAP25 should be read together. The plans taken together provide the roadmap for halving Ireland's emissions by 2030 and achieving carbon neutrality by 2050. The CAP25 sets out how

Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development.

CAP25 discusses in Section 7.3.2 reducing emissions from the Land Use Land-Use Change and Forestry (LULUCF) sector through wetlands rehabilitation schemes. CAP25 has the following action in relation to this:

- Action JM/25/4 Support the restoration and rehabilitation of degraded peatlands.

The EU's Recovery and Resilience Facility, through the National Recovery and Resilience Programme, is investing up to €108 million in the Enhanced Decommissioning, Rehabilitation and Restoration Scheme (EDRRS) to rehabilitate 33,000 ha of peatlands over 82 no. Bord na Móna (BnM) bogs, previously used for peat extraction.

CAP24 had the following key metrics to 2030 to deliver abatement in wetlands, these measures are not explicitly restated in CAP25 but are still relevant as each CAP builds upon the last:

1. *35,900 ha of peatlands to be rehabilitated as part of BnM EDRRS and LIFE People and Peatlands, and*
2. *30,000 ha of additional exploited peatlands rehabilitated.*

Regional Policy

The County Development Plans for Offaly and Kildare have been reviewed for specific policies in relation to climate.

Offaly County Development Plans

There were no specific climate-related policies in the sections of the 1967 Offaly County Development Plan available as part of this assessment.

There were no specific climate-related policies in the sections of the 1995 Offaly County Development Plan available as part of this assessment.

There were no specific climate-related policies in the sections of the 1987 Offaly County Development Plan available as part of this assessment.

The Offaly County Development Plan 2003-2009 discusses renewable energy in Section 13.3 which is of relevance to climate as increased use of renewable energy will reduce greenhouse gas emissions. It is the objective of the council to encourage wind energy developments in so far as they do not have an adverse effect on other aspects of the environment. No other specific climate-related policies were identified in the sections of the 2003-2009 County Development Plan available as part of this assessment.

The Offaly County Development Plan 2009-2015 in Section 8.1 discusses the opportunities for renewable energy development and how this would mean reductions in CO_2 emissions. The Council commit to continuing to take a positive approach to the acceptance and development of renewable energy facilities. Section 10.2 discusses the potential for peatlands to be utilized to accommodate large scale energy production such as wind farms.

The Offaly County Development Plan 2014-2020 under Section 3.7 Energy Policies has a number of policies in relation to renewable energy development, particularly wind energy. The main policy being:

EP-01: It is Council policy to support national and international initiatives for limiting emissions of greenhouse gases and to encourage the development of renewable energy sources.

Section 4.20 of the 2014-2020 development plan contains a specific policy in relation to climate change,

EnvP-01: It is Council policy to reduce emissions to the air of greenhouse gases in order to contribute to a reduction and avoidance of human induced climate change. The Council supports and is committed to the National Climate Change Strategy and, in general to facilitating measures which seek to reduce emissions of greenhouse gases. In this regard, the Council will support any initiatives taken to provide for more sustainable forms of energy use.

The Offaly County Development Plan 2021-2027 outlines in Chapter 3: Climate Action and Energy the strategic aim of the development plan is:

"To achieve a transition to an economically competitive, low carbon climate resilient and environmentally sustainable county, through reducing the need to travel, promoting sustainable settlement patterns and modes of transport, and by reducing the use of non-renewable resources, whilst recognising the role of natural capital and ecosystem services in achieving this."

Section 3.4.1 of the County Development Plan 2021-2027 is specific to peatlands and states:

"*The Council recognises the great potential that the circa 80,000 hectares of industrial peatlands in the midlands offer in relation to after uses ranging from amenity, tourism, biodiversity services, 'wild areas', flood management, climate mitigation, energy development, industry, education, conservation and many more.*"

The climate action and energy policies CAEP16 – CAEP20 of the 2021-2027 development plan are specific policies in relation to peatlands.

In addition to the County Development Plans, Offaly County Council have also produced a Climate Change Action Plan 2024-2029 which outlines how the council will align with Government's national climate objectives, which seeks to transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by 2050. The section on Green Energy outlines how the decarbonisation of the energy sector has affected the midlands region, and particularly Offaly due to the cessation of peat extraction. The section discusses the renewable energy development potential for the county and the progress to date – "*Offaly has 538MW of operational or currently under-construction renewables (wind)*".

Kildare County Council Development Plans

There were no specific climate-related policies in the sections of the 1967, 1972, 1977,1984 and 1985 Kildare County Development Plans available as part of this assessment.

The Kildare County Development Plan 1999-2005 discusses renewable energy in Section 2.51 which is of relevance to climate as increased use of renewable energy will reduce greenhouse gas emissions. It is the objective of the council to strongly support initiatives for limiting emissions of greenhouse gases and encouraging the development of renewable energy sources. No other specific climate-related policies were identified in the sections of the 1999-2005 County Development Plan available as part of this assessment.

The Kildare County Development Plan 2005-2011 in Chapter 8 Energy Efficiency and Renewable Energy includes a number of policies in relation to renewable energy, the main policy of relevance to climate being:

"EN2: To support national and international initiatives for limiting emissions of greenhouse gases through energy efficiency and the development of renewable energy sources which makes use of the natural resources of the county in an environmentally acceptable manner, where it is consistent with the proper planning and sustainable development of the area."

A similar policy is included in Chapter 8 of the 2011-2017 version of the Kildare County Development Plan in relation to renewable energy development and reductions in greenhouse gases.

"ER 2: To support regional, national and international initiatives for limiting emissions of greenhouse gases through energy efficiency and the development of renewable energy sources which make use of the natural resources in an environmentally acceptable manner."

Climate change is referenced in the 2017-2023 Kildare County Development Plan. The Kildare County Council Climate Change Adaptation Strategy 2019 – 2024 is referred to. Policy CS16 states:

"CS 16 Support the implementation of the National Climate Change Strategy and the National Climate Change Adaption Framework Building Resilience to Climate Change 2012 through the County Development Plan and through the implementation of the Climate Resilient Kildare: Climate Change Adaptation Strategy 2019 – 2024 in conjunction with all relevant stakeholders. Ensure that climate action considerations are integrated into land use planning and aid the transition to a climate resilient low carbon society, promoting and maximising the most efficient and sustainable use of land."

The Kildare County Development Plan 2023-2029 includes the following overarching guiding principle in relation to climate change:

"To develop a county that is resilient to climate change, plans for and adapts to climate change and flood risk, facilitates a low carbon future, supports energy efficiency and conservation, and enables the decarbonisation of our lifestyles and economy".

Peatlands are specifically referenced in Chapter 9 of the 2023-2029 Plan, with the following objective being of relevance in relation to peatlands and climate:

"RD O32: Encourage the re-wetting, restoring and/or re-wilding of former cutaway bogs and peatlands with an emphasis on maximising biodiversity and carbon sequestration to account for approximately 70% of cutaway bogs. Such projects shall be subject to Appropriate Assessment; shall have regard to any hydrological connection shared with a European Site and their qualifying interest species; shall not adversely affect drainage of surrounding lands; and shall account for any potential likely significant effects and provide mitigation and monitoring where appropriate."

In addition to the County Development Plans, Kildare County Council have published the *Kildare County Council Climate Action Plan 2024 – 2029* (KCC, 2024). This plan outlines Kildare County Council's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. Kildare County Council (KCC) aims to reduce its direct carbon emissions by 51% by 2030, and supports the generation of renewable energy as part of this. Table 4-3 includes actions for the natural environment and green infrastructure, as part of this Objective 3 states that peatlands should be protected and restored. Actions N16, N17 and N18 are of relevance to restoring peatlands in partnership with BnM,

Guidance

This following guidance documents are considered relevant to this assessment:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) (Environmental Protection Agency, 2022)
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (Transport Infrastructure Ireland, 2022)
- Institute of Sustainability and Environmental Professionals (ISEP) (formerly known as Institute of Environmental Management & Assessment (IEMA)) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance, Edition 2.1 April 2026 with Supplementary Guidance (Institute of Sustainability & Environmental Professionals, 2026)
- IPCC (2006) 2006 IPCC Guidelines for National GHG Inventories
- IPCC (2006a) Guidelines for National Greenhouse Gas Inventories Volume 4: Agriculture, Forestry and Other Land Use, Chapter 7 Wetlands
- IPCC (2013) Supplement to the Guidelines for National Greenhouse Gas Inventories Volume 4: Agriculture, Forestry and Other Land Use, Chapter 7 Wetlands
- IPCC (2014) 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands
- IPCC (2019) Refinement of 2006 IPCC Guidelines for National Greenhouse Inventories, including production of a Methodology Report
- An Coimisiún Pleanála (2025), Guidance for Substitute Consent and Section 37L Applications (ACP 2025)

10.2.2.2 Carbon and Peatlands

A research project undertaken for the Applicant by the Forest Ecosystem Research Group, UCD (Wilson & Farrell, 2007) entitled "CARBAL - *Carbon Gas Balances in Industrial Cutaway Peatlands In Ireland*" investigated the carbon balance in industrial cutover peatlands, where carbon balance was defined as follows:

"Carbon balance: The difference between the amount of C sequestered by the vegetation and that released during autotrophic and heterotrophic respiration, Methane (CH_4) emissions and losses of Diesel Oxidation Catalyst (DOC). Positive values indicate that the ecosystem is a net Carbon (C) sink and negative values indicate ecosystem is a net C source."

The report investigated the post-industrial use of cutover bog with the main options being commercial afforestation, natural regeneration and wetland creation. The report notes that pristine peatlands[1] act as a long-term CO_2 sink due to the persistently high-water table which creates conditions whereby the amount of CO_2 fixed by the peatland vegetation during photosynthesis (P_G) is greater than that released during ecosystem respiration (R_{TOT}) and the net ecosystem exchange (NEE) defined as the difference between uptake and release ($P_G - R_{TOT}$) is positive (Wilson & Farrell, 2007).

The report also notes that pristine peatlands are also a significant source of atmospheric CH_4 accounting for around 23% of global emissions. Again, the position of the water table is important with a decrease in CH_4 emissions associated with a lower water table. For pristine peat, plant mediated transport is the most important pathway for CH_4 movement from the anoxic peat to the atmosphere accounting for between 50-97% of total CH_4 transported (Wilson & Farrell, 2007).

[1] *'pristine peatlands' refers to peatlands where peat soil has at least 30% dry organic matter and a peat depth generally exceeding 40 cm (S. E. & Baird, A. J. Peatlands and global change: response and resilience. Annu. Rev. Environ. Resour. 41, 35–57 (2016))*

In relation to harvested peatlands, CO_2 dynamics undergo significant changes when a peatland is exploited for its fuel resource. Drainage ditches, to facilitate industrial extraction of peat, lower the water table and reduce the moisture content of the peat from approximately 95% to 80%. The removal of the acrotelm layer at the surface and associated vegetation to facilitate the harvesting of peat leads to the removal of the C sequestering capability of the system. This transforms the peatland into a significant source of CO_2. The installation of drainage ditches and the removal of the vegetation layer at the surface results in reduced or zero CH_4 emissions (or even a CH_4 sink) due to the increased oxic zone as the water table is lowered and due to the absence of easily degraded C substrate previously provided by the peatland vegetation and the conduit for CH_4 that is provided by aerenchymatic plants (Wilson & Farrell, 2007).

The report also reviewed some studies that found that it was possible to return the C sink function in a relatively short period of time following the cessation of harvesting provided the water table was maintained close to the surface to minimise losses of CO_2 from degradation of the residual peat and the recolonization of the bare peat substrate occurred quickly. The report also found that rewetting and the return of vegetation also resulted in renewed emissions of CH_4 albeit at much lower levels than reported for nearby pristine peatlands (Wilson & Farrell, 2007).

The wetland creation study (Wilson & Farrell, 2007), based on the creation of a 60ha lake, found that the annual CO_2-C balance (tCO_2-C ha^{-1} yr^{-1}) was negative for all microsites (i.e. a source of C). In relation to CH_4 fluxes, emissions were highest in summer periods due to higher soil temperatures and increased supply of substrates with lower winter levels due to a higher water table. However, recolonization by vegetation is recognised as an essential first step on the road to long term C accumulation in terms of C fixation (photosynthesis). The study concludes that maintaining the water table close to the surface is essential as aerobic decomposition occurs up to 10,000 times faster than anaerobic decomposition. In addition, a high-water table has the dual effect of reducing CO_2 emissions and will also promote recolonization by appropriate wetland vegetation and, over time, may lead to the return of the CO_2 sink function. The study also notes that the long-term objective for wetland creation, with regard to the annual C balance, is to reach a point where the losses of CH_4 are offset by CO_2 uptake (Wilson & Farrell, 2007).

Research in Ireland (Wilson et al, 2015) has investigated a range of both industrial and domestic Irish bogs, in order to determine country-specific emission factors. The results of the study indicated that the emission factors ranged from 1.7 (±0.47) and 1.64 (±0.44) t CO_2-C ha^{-1} yr^{-1} for the industrial and domestic sites respectively which is considerably lower than the Tier 1 EF in the IPCC 2013 Wetlands Supplement. The study found that the variation in emission factors was largely controlled by differences in soil temperature between the sites.

10.2.3 Scoping & Consultation

The scope for this rEIAR has been informed by consultation with statutory consultees, bodies with environmental responsibility and other interested parties such as the Department of Housing, Local Government and Heritage, the Environmental Protection Agency, Transport Infrastructure Ireland,, and the Sustainable Energy Authority of Ireland, as outlined in Section 2.5 of Chapter 2:: Background of the rEIAR. Scoping for the Project was undertaken in February 2022 and again in January 2026. No specific consultation with regard to climate was conducted.

10.2.4 Study Area

In relation to climate, the selection of a specific study area is not as straightforward as with other disciplines as climate impacts are not geographically constrained. Impacts to climate are assessed with

respect to Ireland's compliance with national and EU targets and policies. Therefore, the study area is the Republic of Ireland.

10.2.5 Desktop Review

A desk study was conducted to collate and review background information on the Application Site during the assessment. The relevant information sources are outlined below:

- EPA IPC/IE Licence Register - Allen Bog Group IPC Licence Reg No P0503-01 (https://www.epa.ie/our-services/licensing/licencesearch/, Accessed 09/04/2026)
- Met Eireann Historical 30-Year Average Meteorological Data for Mullingar Station (1978 – 2008) (https://www.met.ie/climate-ireland/1981-2010/mullingar.html, Accessed 09/04/2026)

In relation to climate, the assessment will review changes in CO_2 emissions due to the dewatering of the bog to allow peat extraction and the subsequent decommissioning of the Application Site.

Due to the partially retrospective nature of the assessment, this chapter will focus on existing or pre-existing measures employed to mitigate the likely significant effects of historic peat extraction. Any residual effects are also assessed.

10.2.6 Assessment Methodology

For the purposes of this assessment, the definition outlined in Council Directive 2009/28/EC for greenhouse gases has been used. In *Annex V, C. Methodology Point 5* the relevant greenhouse gases are defined as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O).

Greenhouse gases (GHGs) have different efficiencies in retaining solar energy and different lifetimes in the atmosphere. In order to compare different GHGs, emissions are calculated on the basis of their Global Warming Potential (GWPs) over a 100-year period, giving a measure of their relative heating effect in the atmosphere. The Intergovernmental Panel on Climate Change (IPCC) 6th assessment report (AR6) sets out GWP100 (a system meant to level set the global warming potential of greenhouse gases) for carbon dioxide (CO_2) as the basic unit (GWP = 1) and methane gas (CH_4) has a global warming potential equivalent to 27 units of CO_2 and nitrous oxide (N_2O) has a GWP100 of 273.

For the purposes of calculating GHG emissions only CO_2, CH_4 and N_2O (combined as CO_2e[2]) will be taken into account as there are no significant sources of F-gases from the Project.

10.2.6.1 GHG Emissions from Peat Extraction

A methodology for estimating greenhouse gas emissions associated with the peat extraction was published in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 7 Wetlands (IPCC, 2006a). An update to the methodology was published in the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (IPCC, 2013). The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories states that there is no refinement required on this methodology (IPCC 2019).

[2] *Carbon dioxide equivalent (CO_2e) is a single, standardised unit used to measure and compare the climate impact of different greenhouse gases based on their global warming potential. It converts amounts of gases like methane or nitrous oxide into the matching amount of carbon dioxide that would cause the same level of warming over a set time.*

The 2006 guidelines were designed to estimate and report on national inventories of anthropogenic GHG emissions and removals in order to ensure compliance with the Kyoto Protocol. Anthropogenic refers to GHG emissions and removals that are a direct result of human activities or are a result of natural processes that have been affected by human activities (IPCC, 2006a). The quantity of carbon from natural cycles through the earth's atmosphere, waters, soils and biota is much greater than the quantity added by anthropogenic GHG sources. However, the focus of the UNFCCC and the IPCC is on anthropogenic emissions because it is these emissions that have the potential to alter the climate by disrupting the natural balances in carbon's biogeochemical cycle and altering the atmosphere's heat-trapping ability. The carbon from biogenic sources such as pristine peatland was originally removed from the atmosphere by photosynthesis, and under natural conditions, it would eventually cycle back to the atmosphere as CO_2 due to degradation processes. Thus, these sources of carbon are not considered anthropogenic sources and do not contribute to emission totals considered in the Kyoto Protocol (IPCC, 2006a). The guidelines do however outline a methodology to calculate the anthropogenic greenhouse gas emissions associated with the extraction and abandonment of peat.

The following methodology has been employed in order to calculate the carbon emissions associated with peat extraction and ancillary activities from July 1988 – June 2020, in order to present a precautionary scenario, the full 1988 year and full 2020 year have been utilised for these calculations rather than for a 6-month period (i.e from July 1988 to December 1988) and 6-month period (i.e. January 2020 to June 2020) respectively. It should be noted that large volumes of peat in the Application Site had been removed prior to the baseline year of 1988 however this assessment has focussed on peat extraction between 1988 - 2020. The calculations in relation to carbon emissions were undertaken by AWN based on the areas of peat extracted, provided by the Applicant, all of which is detailed in Section 4.4, 4.5 and 4.6 in Chapter 4 of this rEIAR. The calculations are detailed in the following section.

As mentioned above, the carbon calculations were based on the Intergovernmental Panel on Climate Change (IPCC) guidelines, specifically:

- 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 7: Wetlands
- 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands, Chapter 2: Drained Inland Organic Soils
- 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 7: Wetlands

Carbon Emissions in Peatlands During Peat Extraction

The emission factor recommended in the 2006 guidelines for use in Ireland was 0.2 (nutrient-poor bogs) and 1.1 (nutrient-rich bogs) t CO_2-C ha^{-1} yr^{-1} whilst the 2013 guidance updated these emission factors to a single higher emission factor of 2.8 t CO_2-C ha^{-1} yr^{-1}.

The 2013 Tier 1 guidelines for on-site excavation and storage of peat were based on the formula below and based on an estimated area for the extracted peat:

$$CO_{2total} = CO_2 - C_{on\text{-}site} * (44/12)$$

$$CO_2 - C_{on\text{-}site} = [A \times EF]$$

Where:
$CO_2 - C_{on\text{-}site}$ = annual on-site CO_2-C emissions from peat deposits, tonnes C yr^{-1}
A = ha area of peat soils managed for peat extraction, ha

EF = emission factor for peat soils managed for peat extraction or abandoned after peat extraction (default of 2.8 tonnes C ha^{-1} yr^{-1})

N_2O Emissions from Peatlands During Peat Extraction

The emissions of N_2O associated with peat extraction were based on Equation 7.7 of the 2006 IPCC guidelines (2006a) and outlined below. The N_2O emissions were converted to a CO_2e figure by multiplying by 273.

$$N_2O_{peat\ extraction} = [(A \times EF)*(44/28)]/1000$$

Where:
$N_2O_{peat\ extraction}$ = *direct N_2O emissions from peatlands managed for peat extraction, tonnes N_2O yr^{-1}*
A = area of peat soils managed for peat extraction, ha
EF = emission factor for drained wetlands organic soils, kg N_2O ha^{-1} yr^{-1} (default of 1.8 kg ha^{-1} yr^{-1})

CH_4 Emissions from Drainage Ditches

The creation of drainage ditches resulted in CH_4 emissions. These were calculated based on Equation 7.12 of the 2019 refinement to the 2006 IPCC guidelines (IPCC, 2019) and the area of drainage ditches across the site. An average width of 5.5m was assumed for the drainage ditches for the purposes of this calculation. The CH_4 emissions were converted to a CO_2e figure by multiplying by 27.

$$F_{CH4} = (A \times EF)$$

Where:
F_{CH4} = *total annual flux of CH4 from ponds and ditches, kg CH_4 yr^{-1}*
A = Area, ha
EF = Emission factor for waterbody (default of 416 kg CH_4 ha^{-1} yr^{-1})

10.2.6.2 CO_2 Reductions from Peatland Rehabilitation

The rewetting of the bogs will aid in restoring the carbon sink potential of the land. Therefore, the rewetting activities as part of the Remedial Phase will result in converting the Application Site from a carbon source to a carbon sink. The CO_2e emission reduction associated with the Remedial Phase was calculated using the Emissions Calculator Guidance for Peatland Code Version 2.1 calculation spreadsheet and methodology developed by the International Union for Conservation of Nature (IUCN) UK National Committee UK Peatland Programme (2025).

The emissions figures used within the IUCN UK National Committee Peatland Code Bog Emissions & Carbon Calculator v2.3 calculation spreadsheet are based on *Aligning the Peatland Code with the UK peatland inventory* (Evans et. al, 2022 and 2023 update). As part of these calculations, the methodology applies a 5% reduction to the gross emissions reduction to ensure the model is conservative in its predictions and as an acknowledgement of any emissions that would arise as a result of rehabilitation activities.

The calculator spreadsheet requires input of the area of peatland to be restored and the baseline condition (pre-rehabilitation) of the peatland. The Pre-Restoration condition has been stated as "Drained: Artificial" and the Post-Restoration Condition has been described as "Rewetted modified bog". The spreadsheet then calculates the potential CO_2e reductions over a 0 – 100 year period for the Application Site at 5-year intervals.

Information on the areas of peat rehabilitation were based on Table 4-10 of Chapter 4 and the rehabilitation plans in Appendix 4-2. An area of 4,177 ha was used in the calculations. Areas classified as 'marginal land', 'constraints' or 'silt ponds' were excluded from the calculations. It has been assumed that 'deep peat cutover bog', 'dry cutaway' and 'wetland cutaway' areas will be fully rehabilitated for the purposes of the carbon calculations.

It is a requirement of the IPC licence for the Application Site that the Cutaway Bog Decommissioning and Rehabilitation Plans are implemented. As such, natural revegetation of the Application Site is not considered a likely scenario and managed rehabilitation as per the Plans is the most likely future scenario. As such, the carbon calculations for the Remedial Phase have been undertaken on this basis.

10.2.6.3 GHG Emissions from Traffic

Emissions from road traffic associated with the Peat Extraction Phase, Current Phase and Remedial Phase have the potential to emit CO_2, N_2O and CH_4 (combined as CO_2e) which can impact climate.

Information on traffic movements during the Peat Extraction Phase, Current Phase and Remedial Phase is provided in Chapter 14: Material Assets: Traffic. Chapter 14 has been reviewed in order to inform this assessment. Based on data in Table 14-1 and Section 14.2.4 of Chapter 14, the following traffic movements in Table 10-3 associated with each phase have been quantified. This is based on an average 252 working days per year. Further assumptions are detailed in Chapter 14 of this rEIAR.

Table 10-3 Summary of Traffic Movements During Project Phases

Project Phase	Average Annual HGV	Average annual LGV Movements
Extraction Phase	**1,295** (42,719 over 33 years)	**64,512 per year** (2,128,896 total movements over 33 years)
Current Phase	**2841** (5,884 over 7 years)	**1,769** (12,384 over 7 years)
Remedial Phase	**None**	**157 per year** (4,704 Total LGV movements over 30-year period)

For the purposes of this assessment, staff employed at the Application Site are assumed to live locally and a one-way trip distance of 20 km has been utilised. As per Chapter 14, staff trips are assumed to be 2-way, therefore a total of 40 km has been used to account for staff vehicle trips to and from the Application Site. There were a number of customers/destinations for the extracted peat transported by HGV during the Peat Extraction Phase and Current Phase, these include:

a. Customers/destinations across the Peat Extraction Phase were; Ballydermot Works for sale to the public via the tiphead, Allenwood Power Station, Edenderry Power Station, Lullymore Works, Ballivor Factory, Cúil na Móna Factory, Derrinlough Briquette Factory, Dublin Port, Kilberry Factory, Lanesboro Power Station, Littleton Briquette Factory, Lough Ree Power Station, Lullymore Briquette Factory, West Offaly Power station and other external customers according to BnM sales records.
b. Customers/destinations across the Current Phase were; Ballivor Factory, Derrinlough Briquette Factory, Cúil na Móna Factory, Dublin Port, Edenderry Power Station and other external customers, according to BnM sales records.

Assuming a precautionary approach, a one-way trip distance of 100 km has been used for HGV trips within this assessment. HGV movements were assumed to be on-way, i.e. no return journey as per Chapter 14.

The total vehicle trips distances were multiplied by the relevant emission factors in the TII Carbon Tool (2025) in order to quantify the GHG emissions as a tCO_2e. The TII Carbon Tool (TII, 2025) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), Sustainable Energy Authority of Ireland (SEAI) and Inventory of Carbon and Energy (ICE) database. The GHG emissions are calculated by multiplying the emission factor by the quantity of the material/activity. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent). Emission factors for vehicle GHG emissions in previous years back to 1988 were likely higher than those assumed for this assessment as engine technologies have improved over time. However, the current emission factors from the TII Carbon Tool have been applied in the absence of older emission factors for 1988.

As traffic movements associated with the Remedial Phase are minor in comparison to the Peat Extraction Phase and Current Phase (see Table 10-3), they have been scoped out of further assessment as they will not contribute significantly to the total GHG emissions for the Remedial Phase.

The traffic assessment in Chapter 14 has assumed a 33-year period for the Peat Extraction Phase and associated vehicle movements over the 1988 – 2020 period, i.e. the full 1988 year and full 2020 year have been utilised for calculating the average annual vehicle movements, with the full 2020 year included for the traffic impact assessment in both the Peat Extraction Phase and Current Phase. The GHG traffic emissions assessment within this chapter has used the average traffic figures as detailed in Table 10-3 above but has averaged the emissions from the Peat Extraction Phase over a 32-year period. The full 1988 year and full 2020 year have been utilised for the GHG traffic emissions calculations rather than for a 6-month period (i.e from July 1988 to December 1988) and 6-month period (i.e. January 2020 to June 2020) respectively. This aligns with the approach taken for the GHG emissions from Peat Extraction also. The difference in 32 years versus 33 years for the calculations will not have a material impact on the overall conclusions of the assessment.Significance Criteria for Climate

In accordance with the Institute of Sustainable Environmental Professionals (ISEP) (formerly knowns as the Institute of Environmental Management and Assessment (IEMA)) guidance (ISEP, 2026) and 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), the significance of the impacts of GHG emission resulting from a given project is based on how it contributes or not to the National objective for Ireland to achieve carbon neutrality by 2050, that is that a project contributes to reducing GHG emissions. This process requires an assessment of the quantified GHG emissions against the sensitivity of receptors (Ireland's national GHG targets or National Climate Objective), qualification of the potential measures that might mitigate against GHG emissions, and a degree of professional judgement that takes account of the balance of all of these factors. Both the ISEP and TII guidance documents are explicit in this concept, and both guidance documents also highlight the issue of significance in the context of how a project mitigates its GHG emissions.

In order to streamline the process and provide accountability, the criteria outlined in PE-ENV-01104 (TII, 2022) and reproduced in Table 10-4 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
- The level of mitigation taking place.

The GHG emissions or reductions associated with the Peat Extraction Phase, Current Phase and Remedial Phase have been contextualised by comparing them with the 2026 – 2030 and 2031 – 2035 national carbon budgets set out in Table 10-1. In addition, vehicle-related GHG emissions have been compared against the carbon budgets and the 2030 sectoral emission ceiling for the Transport sector set out in Table 10-2. Emissions from peat extraction fall under the LULUCF category which does not have an associated sectoral emissions ceiling for comparison. The criteria in Table 10-4 and the above two bullet points from the TII PE-ENV-01104 guidance have been used to determine the significance of each of the project phases. Where no mitigation was or is in place to reduce GHG emissions, impacts are considered significant.

Table 10-4 Climate 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; and › No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate adverse	› The project's GHG impacts are partially mitigated. › The project has partially complied with Do-Minimum standards set through regulation, and have not fully complied with local or national policies; and › Falls short of full contribution to Ireland's trajectory towards net zero.
not significant	Minor adverse	› The project's GHG impacts are mitigated through 'good practice' measures. › The project has complied with existing and emerging policy requirements; and › Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	› The project's GHG impacts are mitigated beyond design standards. › The project has gone well beyond existing and emerging policy requirements; and › Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	› The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. › The project has gone well beyond existing and emerging policy requirements; and › Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

10.2.7 Difficulties Encountered

Historical data for climate for the period 1988 – present day was investigated in order to establish the relevant baseline. However, published data for this exact time period was not available for every source and therefore, data from as far back as possible has been used in establishing the baseline.

10.3 Establishment of Baseline (July 1988)

The baseline environment has been established as July 1988 for the purpose of this assessment. Historical data for climate from this time period was investigated in order to establish the relevant baseline. However, published data for this exact time period was not available for every source and therefore, data from as far back as possible has been used in establishing the baseline. The year 1990 is typically taken as the historical baseline year by countries when reporting GHG emissions under the United Nations Framework Convention on Climate Change (UNFCCC). Detailed emissions inventories for the full period 1988 to present are not available for the purposes of establishing the full climate baseline for this assessment. Data from 1990 are considered representative of the baseline conditions in July 1988. In order to frame the July 1988 baseline against the current climate context, and historic climate data, trends in GHG emissions for the period 1990 – 2025 have been discussed in the following section.

10.3.1 Greenhouse Gas Emissions and Climate Baseline

Although variation in climate is thought to be a natural process, the rate at which the climate is changing has been accelerated rapidly by human activities. Climate change is one of the most challenging global issues facing us today and is primarily the result of increased levels of GHGs in the atmosphere. These GHGs come primarily from the combustion of fossil fuels in energy use. Moving away from our reliance on coal, oil and other fossil fuel-driven power plants is essential to reduce emissions of GHGs and combat climate change.

For the purposes of this assessment, the definition for GHGs outlined in Council *Directive 2009/28/EC* on the promotion of the use of energy from renewable sources and amending and subsequently repealing *Directives 2001/77/EC* and *2003/30/EC* (European Parliament and Council of Europe 2009) has been used. In *'Annex V, C. Methodology Point 5'* the relevant GHGs are defined as Carbon Dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) which are also the most significant GHGs. Climate is defined as the average weather over a period of time, whilst climate change is a significant change to the average weather. Climate change is a natural phenomenon but human activities, which have resulted in the release of GHGs, have impacted on the climate (IPCC 2015). The release of anthropogenic GHGs is altering the Earth's atmosphere resulting in a 'Greenhouse Effect'. This effect is causing an increase in the atmosphere's heat trapping abilities resulting in increased average global temperatures over the past number of decades. The release of CO_2 as a result of burning fossil fuels, has been one of the leading factors in the creation of this 'Greenhouse Effect'.

Trends in GHG emissions at a national level are available in annual reports by the EPA. The most recent EPA report entitled '*Ireland's Provisional Greenhouse Gas Emissions 1990 – 2025*[3] (EPA, 2026a) reviews national emissions in 2024 and trends in emissions from 1990.

The EPA reported that GHG emissions in 2025 are 5.5% lower than emissions in 1990, which is the third consecutive year that emissions are below the 1990 historic baseline. Between 1990 and 2025 the greatest overall increase in emissions is from the Transport sector which has shown a 125.7% increase in emissions, particularly in relation to road transport which in large part is attributable to increasing population and economic prosperity. The Energy Industries have shown a decrease in emissions of 41.8% over the 1990 – 2025 period. This decrease reflects the improvement in efficiency of modern gas fired power plants replacing older peat and oil-fired plants and the increased share of renewables, primarily wind power, along with increased interconnectivity. The Agricultural sector has shown a 0.8%

[3] *https://www.epa.ie/publications/monitoring–assessment/climate-change/air-emissions/EPA-Provisional-GHG-Emissions-1990-2025-web.pdf*

decrease in emissions over the 1990 – 2025 period. Agriculture sector emissions decreased between 1998 until 2011 but since 2011 emissions have been on an upward trend. Emissions from the Residential sector showed a general upward trend in emissions after 1997 due to increased housing stock and growing population. Emissions remained relatively stable over the 2015 to 2021 period despite an increasing population. Emissions from the Residential sector in 2025 were 31.1% lower than in 1990.

Figure 10.1 taken from the EPA report (2026a) shows the trend in emissions from the largest sectors over the 1990 – 2025 period. It is clear from the EPA report that emissions in 1990, which is representative of the baseline year of 1988, were lower than in the intervening years and are similar to current GHG emissions in 2025; with emissions in 2025 being 5.5% lower than emissions in 1990. Therefore, any increase in historical GHG emissions is considered more significant due to the lower baseline levels of GHGs.

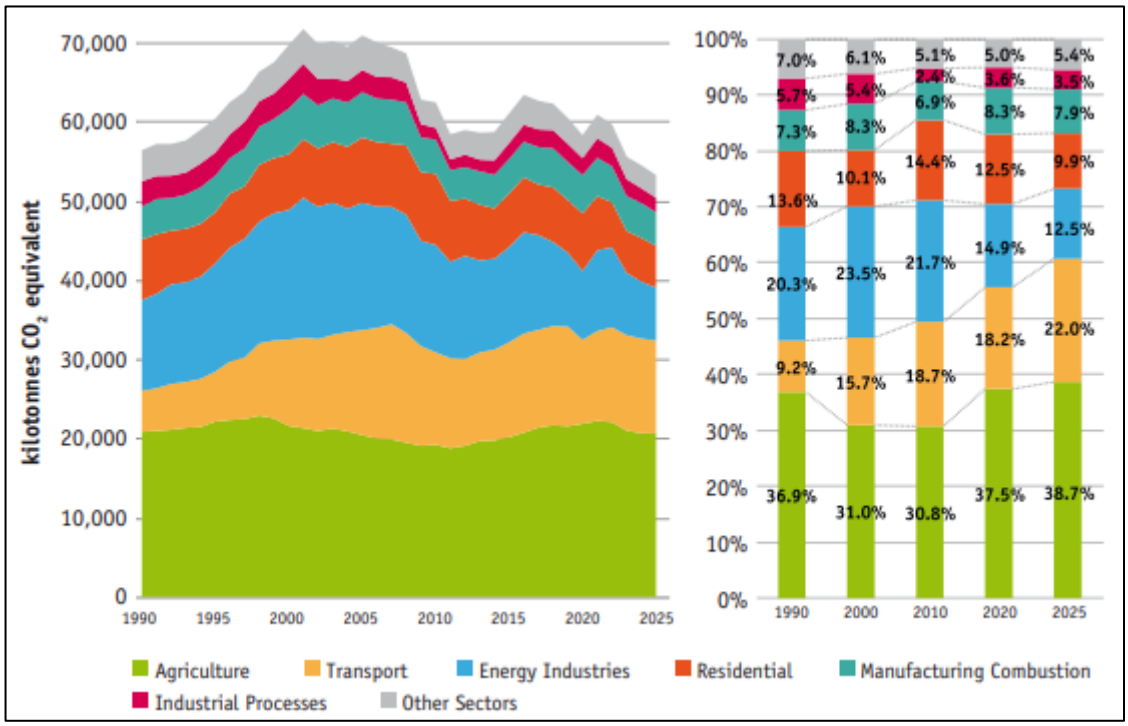

Figure 10.1 *Trend in Emissions for Largest Sectors 1990-2025* (Source: Figure 24 EPA (2026a) Ireland's Provisional Greenhouse Gas Emissions 1990 – 2025)

In relation to the current climate GHG emissions baseline, and in order to frame the July 1988 Baseline against a current climate context, Ireland's compliance with the EU Effort Sharing Regulation (ESR) (EU 2018/842) and the published carbon budgets (Table 10-1) has been reviewed. Data published in July 2026 (EPA, 2026a) states that Ireland exceeded (without the use of flexibilities) its 2025 annual limit set under EU's Effort Sharing Regulation by 5.01 $MtCO_2e$. Cumulatively from 2021-2025 and after using the ETS flexibility, Ireland is not in compliance with the ESR by a net distance to target of -4.86 Mt CO_2e. Agriculture and Transport accounted for 76.1% of total ESR emissions in 2025.

The EPA GHG Emissions Projections report (EPA, 2026b) states that the latest projections indicate that currently implemented measures (With Existing Measures) will achieve a reduction of12.7% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the higher ambition (With Additional Measures) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 23.4% by 2030, still short of the 42% reduction target. The EPA GHG emissions projections

report for 2025 - 2030 (EPA, 2026b) states that Ireland is not on track to meet the 51% emissions reduction target by 2030 (compared to 2018). Full implementation of a wide range of policies and plans across all sectors that deliver carbon savings is required to achieve a projected reduction of 25%.

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

In relation to compliance with the sectoral emissions ceilings (SECs), the provisional GHG emissions estimates (see Table 10-5) indicate that four sectors, Buildings (Residential), Buildings (Commercial and Public), Agriculture and Other, have stayed within their sectoral emissions ceilings. The other three sectors, Electricity, Transport and Industry have exceeded their sectoral emissions ceilings. The EPA state that the National Climate objective of a 51% reduction by 2030 will be unattainable unless every sector meets its indicative percentage reduction target.

Table 10-5 Trends in National GHG Emissions 2021 – 2025

Sector [Note 1]	2021	2022	2023	2024	2025	Total	Sectoral Emissions Ceiling 2021-2025	% SEC 2021-2025 Used
	$MtCO_2e$							
Electricity	9.82	9.62	7.50	6.89	6.30	40.12	40	100.3%
Transport	11.19	11.88	11.93	11.78	11.61	58.40	54	108.1%
Buildings (Residential)	6.71	5.62	5.23	5.49	5.21	28.26	29	97.4%
Buildings (Commercial and Public)	1.42	1.38	1.34	1.44	1.39	6.97	7	99.6%
Industry	7.25	6.82	6.47	6.20	6.00	32.74	30	109.1%
Agriculture	21.97	21.78	20.72	20.44	20.40	105.30	106	99.3%
Other [Note 2]	1.82	1.85	1.73	1.64	1.75	8.79	9	97.6%
LULUCF	2.87	2.47	2.97	2.51	2.51	13.33	-	N/A
National Total (incl. LULUCF)	**63.05**	**61.42**	**57.89**	**56.38**	**55.16**	**293.90**	**295**	**99.6%**
Note 1 Reproduced from latest emissions data from the EPA (EPA, 2026a).								
Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).								

10.3.2 Meteorological Data

Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Mullingar, Co. Westmeath is the nearest weather and climate monitoring station to the Application Site that has meteorological data recorded for the 30-year period from 1979-2008. The monitoring station is located approximately 32 km northwest of the Application Site. Meteorological data recorded at Mullingar over the 30-year period is shown in Table 10-6. The wettest month was October and the driest month on average was April. July was the warmest month with a mean temperature of 15.2° Celsius. This meteorological data can be considered representative of the weather conditions for the July 1988 baseline.

Table 10-6 Data from Met Éireann Weather Station at Mullingar 1979– 2008: Monthly and Annual Mean and Extreme Values

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TEMPERATURE (degrees Celsius)													
mean daily max	7.4	7.9	9.8	12.1	14.9	17.3	19.2	18.9	16.7	13.2	9.9	7.9	12.9
mean daily min	1.5	1.5	2.8	4.1	6.3	9.2	11.1	10.8	8.9	6.2	3.5	2.2	5.7
mean temperature	4.5	4.7	6.3	8.1	10.6	13.2	15.2	14.8	12.8	9.7	6.7	5.0	9.3
absolute max.	13.8	15.4	19.1	21.6	25.0	28.3	29.7	29.1	25.0	20.1	17.3	14.6	29.7
min. maximum	-3.2	-0.6	1.4	4.1	0.0	10.1	10.9	11.4	10.6	6.3	2.7	-1.7	-3.2
max. minimum	11.6	11.5	11.5	12.5	12.7	15.3	17.4	18.0	16.8	15.4	12.5	12.4	18.0
absolute min.	-14.9	-6.6	-8.0	-4.4	-2.6	0.2	3.8	2.1	0.0	-4.4	-6.9	-12.4	-14.9
mean num. of days with air frost	9.9	8.9	5.5	3.1	0.4	0.0	0.0	0.0	0.0	1.5	5.4	8.2	43.0
mean num. of days with ground frost	17.9	16.2	14.0	10.8	5.1	0.8	0.0	0.1	1.7	6.3	12.1	15.4	100.4
mean 5cm soil	3.3	3.3	5.0	8.1	11.8	14.8	16.3	15.5	12.8	8.9	5.7	4.1	9.1
mean 10cm soil	3.7	3.7	5.1	7.6	11.0	14.1	15.8	15.2	12.8	9.3	6.2	4.5	9.1
mean 20cm soil	4.3	4.4	5.8	8.1	11.4	14.3	16.1	15.8	13.7	10.3	7.2	5.2	9.7
RELATIVE HUMIDITY (%)													
mean at 0900UTC	90.8	89.8	87.6	81.9	78.3	79.7	82.1	84.8	87.6	89.9	91.7	91.8	86.3
mean at 1500UTC	83.4	77.8	72.8	68.1	67.1	69.1	69.9	70.6	72.1	77.0	82.2	85.9	74.7

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
SUNSHINE (hours)													
mean daily duration	1.8	2.5	3.2	4.9	5.8	5.0	4.6	4.6	3.9	3.2	2.2	1.6	3.6
greatest daily duration	8.2	9.9	10.9	13.6	15.4	15.9	15.3	14.4	12.2	10.1	8.6	7.3	15.9
mean num. of days with no sun	10.3	7.2	5.3	2.9	1.9	2.2	1.8	1.9	3.3	5.7	8.4	11.0	62.0
RAINFALL (mm)													
mean monthly total	91.7	72.0	78.3	62.1	68.7	70.5	61.8	80.8	73.8	102.1	82.4	97.1	941.3
greatest daily total	30.3	24.7	29.5	27.6	26.1	52.9	26.6	58.2	42.1	48.8	43.7	38.8	58.2
mean num. of days with >= 0.2mm	19	17	20	15	16	16	16	17	17	19	18	19	209
mean num. of days with >= 1.0mm	15	13	15	11	12	11	11	13	12	14	13	14	154
mean num. of days with >= 5.0mm	6	5	5	4	5	4	3	5	4	6	6	7	60
WIND (knots)													
mean monthly speed	9.0	9.1	9.1	7.7	7.3	6.7	6.4	6.3	6.7	7.5	7.8	8.3	7.6
max. gust	67	71	59	56	58	48	48	50	51	59	62	73	58.5
max. mean 10-minute speed	38	36	36	30	34	26	27	28	32	36	32	39	32.8
mean num. of days with gales	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.8

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
WEATHER (mean no. of days with)													
snow or sleet	5.0	4.4	3.5	1.6	0.2	0.0	0.0	0.0	0.0	0.0	0.4	2.7	17.8
snow lying at 0900UTC	2.7	0.9	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	5.7
hail	0.6	0.9	2.0	2.0	1.1	0.2	0.1	0.1	0.1	0.5	0.2	0.3	8.1
thunder	0.1	0.2	0.2	0.3	0.9	0.9	1.2	0.8	0.1	0.1	0.1	0.1	4.9
fog	3.4	3.0	2.4	2.0	1.8	1.3	1.9	2.9	4.0	4.1	4.1	4.3	35.1

10.4 Likely significant Effects and Associated Mitigation Measures

10.4.1 Do-Nothing Scenario

As outlined in the EPA Guidelines (May 2022), the description of 'Do-Nothing Effects' relates to the environment as it would be in the future should the project not be carried out. Peat extraction was underway at the Application Site prior to the required date for the transposition of the EIA Directive in 1988. If peat extraction and ancillary activities had ceased from 1988 onwards, then consequently there would have been no further peat extraction from the site and therefore no impact on climate.

For those lands which as of 1988 had been subject to the installation of drainage in preparation for peat extraction but not peat extraction itself, it is assumed in the 'do-nothing' scenario that drainage would have remained in situ. Maintenance works to keep established drainage channels clear would have ceased as of 1988 in the 'do-nothing' scenario. It is likely that these areas would have been subject to natural recolonisation of the bog surface.

However, consideration must be given to the following:

- The legislative mandate given to BnM in the form of the Turf Development Act 1946, (as amended) to acquire and develop peatlands; and
- The uncertainty with respect to the planning status of the activity did not arise until 2019 and was not evident in 1988.

Therefore, this 'Do-Nothing' scenario was not the chosen scenario. Peat extraction and ancillary activities have occurred at the Application Site from July 1988 onwards. A decision to cease peat extraction at the Application Site was taken in 2020 and the Application Site needs to be considered in the context of regularising (without prejudice) the planning status of the lands to facilitate future development (subject to planning consent as required). The Application Site has and will continue to revegetate, and there will be a change from areas of cutover peatland to revegetated peatland. These are described in the individual chapters of the rEIAR.

As part of BnM's statutory obligations under IPC licence requirements, the Draft and Final Cutaway Bog Decommissioning and Rehabilitation Plans will continue to be implemented for the Application Site separate to, and independent of, the Substitute Consent application. The implementation of this plan is included in the impact assessment below.

10.4.2 Peat Extraction Phase (July 1988 - June 2020)

Lowering the water table increases the oxidation of the peat and in turn causes a rise in CO_2 emissions, this is further increased by the removal of vegetation and exposure of the peat that was present on the Application Site (Holmgren et al 2006) (Waddington & Price 2000). However, lowering of the water table had already occurred at the Application Site prior to 1988. The effects of drainage may also reduce dissolved and particulate organic carbon retention within the peat. Losses of carbon dioxide due to leaching of dissolved and particulate organic carbon are calculated as a proportion of the gaseous losses of carbon from the peat. The degraded bogs will continue to act as sources of these GHG until either they are rewetted/revegetated, the peat is removed, or all the remaining peat has oxidised. As a result of the draining of the bog and the removal of the vegetation, the peatland transformed from a net CO_2 sink to a net CO_2 source (Wilson 2013).

Using the assessment methodology outlined in Section 10.2.6, the CO_2 emissions associated with peat extraction and ancillary activities over the period 1988 – 2020 were calculated. In order to present a precautionary scenario, the full 1988 year and full 2020 year have been utilised for these calculations rather than for a 6-month period (i.e from July 1988 to December 1988) and 6-month period (i.e. from January 2020 to June 2020) respectively. For the purposes of this assessment it was assumed that the entire Application Site area of 5,448 ha was drained and subject to peat extraction. This is a conservative approach as the entirety of the Application Site was not subject to active peat extraction at the one time.

In total, 2,865,247 tCO_2 was released over during the Peat Extraction Phase. Over this 32-year period there was on average 89,539 tonnes of CO_2 per annum released from the Application Site. Annually this equates to 0.045% of Ireland's 2026 – 2030 carbon budget of 200 $MtCO_2e$ or 0.059% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$ (see Table 10-1).

There were also GHG emissions associated with vehicles accessing the Application Site, this includes HGV emissions from vehicles removing peat from site to end users and site workers. Table 10-7 outlines the total vehicle GHG emissions associated with the Peat Extraction Phase. Over the 32-year Peat Extraction Phase an estimated total of 21,909 tCO_2e was released from vehicle emissions or 685 tCO_2e on average per annum. Annually this equates to 0.011% of Ireland's 2030 Transport sector emissions ceiling (set out in Table 10-2), or 0.0003% of Ireland's 2026 – 2030 carbon budget of 200 tCO_2e and 0.0005% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$ (set out in Table 10-1).

Table 10-7 Vehicle GHG Emissions: Peat Extraction Phase

Annual Average HGV Movements	Annual Average Vehicle kms	Emission Factor (tCO2e/km)	Annual HGV GHG Emissions (tCO2e)	Total HGV GHG Emissions over Project Phase (tCO2e)	Total Vehicle GHG Emissions over Project Phase (tCO2e)
1,295	129,500	0.00108	140	4,494	21,909
Annual Average LGV Movements	**Annual Average Vehicle kms**	**Emission Factor (tCO2e/km)**	**Annual LGV GHG Emissions (tCO2e)**	**Total LGV GHG Emissions over Project Phase (tCO2e)**	
64,512	2,580,480	0.00021	544	17,415	

The primary source of GHG emissions throughout the Peat Extraction Phase was the extraction of peat and the subsequent loss of carbon sink, with vehicle emissions also contributing to overall site-related GHG emissions. The removal of the carbon store of the site and the subsequent release of CO_2 from peat extraction and ancillary activities during the Peat Extraction Phase resulted in a major significant adverse impact to climate as per the criteria in Table 10-4. In accordance with the EPA Guidelines (Environmental Protection Agency, 2022), a 'major significant adverse' impact equates to an impact during the Peat Extraction Phase that is a **direct** impact due to its presence, **long-term** as a result of the estimated lifetime of the Peat Extraction Phase and **negative** due to the emission of GHGs and loss of carbon sink. The impact on the climate is considered **significant**.

10.4.3 Current Phase

As peat extraction ceased at the Application Site in June 2020, carbon losses associated with peat extraction and the subsequent impact to climate are not relevant to this phase.

However, areas of degraded bogs will continue to act as sources of these GHG until they are either rewetted/revegetated, the peat is removed, or all the remaining peat has oxidised. In addition to the consideration of the loss of a sink due to the dewatering/removal of vegetation, consideration must be given to the dewatered peat now being a source of CO_2e. Renou-Wilson et al. (2018) studied a range of blanket and cutover raised bogs in Ireland in its assessment. Site-specific rates for CO_2 and CH_4 emissions were calculated based on studies at 4 no. Irish bogs. The study, over five years, found that the drained bare peat sites were a net annual CO_2 source and resulted in an average emission factor of 1.2 t CO_2-C ha^{-1} yr^{-1}. In terms of CH_4 and N_2O, the net ecosystem exchange (NEE) (net CO_2 flux between land-atmosphere) was approximately neutral. Using the average emission factor of 1.2 t CO_2-C ha^{-1} yr^{-1} in conjunction with the area of the Application Site (5,448 ha) it can be concluded that there will be carbon emissions associated with the Current Phase of 6,265 tCO_2e per year. A conservative approach has been taken in this assessment in assuming that the entire Application Site area is a current CO_2 source.

The Current Phase of the Project has the potential to emit approximately 6,265 tCO_2e each year until the land is rewetted or revegetated or developed into an alternative land use. In the context of Ireland's carbon budgets, this annual emission equates to 0.003% of Ireland's 2026 – 2030 carbon budget of 200 $MtCO_2e$ or 0.004% of Ireland's more stringent 2030 – 2035 carbon budget of 151 $MtCO_2e$ (see Table 10-1).

Other elements of the Current Phase are the removal of stockpiled peat, which was completed in October 2021, decommissioning works and ongoing environmental and ecological monitoring. There is the potential for some minor GHG emissions associated with vehicles accessing the Application Site for removal of stockpiled peat, for decommissioning works or for monitoring works. The GHG emissions associated with vehicles are detailed in Table 10-8.

During the Current Phase an estimated total of 743 tCO_2e was released from vehicle emissions or 106 tCO_2e on average per annum. Annually this equates to 0.002% of Ireland's 2030 Transport sector emissions ceiling (set out in Table 10-2), or 0.0001% of Ireland's 2026 – 2030 carbon budget of 200 tCO_2e and 0.0001% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$ (set out in Table 10-1).

Table 10-8 Vehicle GHG Emissions: Current Phase

Annual Average HGV Movements	Annual Average Vehicle kms	Emission Factor (tCO2e/km)	Annual HGV GHG Emissions (tCO2e)	Total HGV GHG Emissions over Project Phase (tCO2e)	Total Vehicle GHG Emissions over Project Phase (tCO2e)
841	84,100	0.00108	91	638	743
Annual Average LGV Movements	**Annual Average Vehicle kms**	**Emission Factor (tCO2e/km)**	**Annual LGV GHG Emissions (tCO2e)**	**Total LGV GHG Emissions over Project Phase (tCO2e)**	
1,769	70,760	0.00021	15	104	

The impact to climate from the Current Phase is considered major significant adverse as per the criteria in 4 based on the drained bog being a carbon source and emissions from vehicles. In accordance with the EPA Guidelines (Environmental Protection Agency, 2022), a 'major significant adverse' impact equates to an impact during the Current Phase that is a **direct** impact due to its presence, **short-term** as a result of the estimated lifetime of the Current Phase and **negative** due to the emission of GHGs. The impact on the climate is considered **significant**.

10.4.4 Remedial Phase

The primary focus of the rehabilitation phase is re-wetting the bogs which will aid in restoring the carbon store function and promote the carbon sink potential of the land. As mentioned, research by Wilson et al. (2013) has indicated that rehabilitation of peatlands can mitigate the carbon emitted as a result of peat extraction. However, the research notes that the carbon sink potential is not equivalent to the original sink potential of undisturbed peatlands. Large volumes of peat in the Application Site had been removed prior to the baseline year of 1988. Therefore, the carbon sink potential of the land in the baseline scenario was significantly less than the undisturbed peatland. As a result, the re-wetting activities of the rehabilitation phase aid in formation of new peat over time which will have a materially beneficial impact in raising the carbon sink potential of the land when compared to the baseline scenario.

It is a requirement of the IPC licence for the Application Site that the Cutaway Bog Decommissioning and Rehabilitation Plans are implemented. While some small areas of natural revegetation may occur across the Application Site, this is not considered the likely scenario for the majority of areas and managed rehabilitation as per the Plans is the most likely future scenario. As such, the carbon calculations have been undertaken on this basis, that the areas identified in the Cutaway Bog Decommissioning and Rehabilitation Plans will be manually rehabilitated. The CO_2 reductions associated with the rewetting and rehabilitation of the Application Site are quantified in Section 10.8.

The purpose of the Remedial Phase of the Project is in line with a number of key actions and priorities within the Climate Action Plan 2024 and Climate Action Plan 2025 in relation to the rehabilitation of peatlands, specifically those within the Midlands area. With the rehabilitation of the carbon sink potential of the land, albeit, to a lesser extent than the potential prior to the historic removal of the peat, the Application Site will aid in Ireland's trajectory towards net zero by 2050. Using the assessment criteria in 10-4, the Remedial Phase of the Project is considered minor adverse and not significant as the Project aligns with the following criteria from 10-4:

- 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.

As per the ISEP GHG guidance (ISEP, 2026) (which has been embraced by the updated TII Guidance (TII, 2022) in Section 6.7.2 of PE-ENV-01104) a 'minor adverse' impact is described as follows:

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

In accordance with the EPA Guidelines (Environmental Protection Agency, 2022), the above criteria equates to an impact during the Remedial Phase that is a **direct** impact due to its presence, **long-term** as a result of the estimated lifetime of the Remedial Phase and **beneficial** due to the reduction in emission of GHGs. The impact on the climate is considered **not significant**.

10.5 Control and Monitoring Measures

10.5.1 Peat Extraction Phase (July 1988 – June 2020)

No control measures in relation to climate were implemented during the Peat Extraction Phase.

10.5.2 Current Phase (June 2020 – Present Day)

No control measures in relation to climate and carbon emissions is relevant for the Current Phase.

10.5.3 Remedial Phase

There are no mitigation measures required in relation to climate for the Remedial Phase.

10.6 Residual Effects

10.6.1 Peat Extraction Phase (July 1988 - June 2020)

The removal of the carbon store of the Application Site and the subsequent release of CO_2 as a result of peat extraction and ancillary activities, including vehicle emissions, during the Peat Extraction Phase resulted in a major significant adverse impact to climate as per the criteria in Table 10-4This equates to a long-term, direct, negative and significant impact to climate using the EPA EIA terminology. The re-wetting of the bog will aid in restoring the carbon sink potential of the land. Research by Wilson et al. (2013) has indicated that rehabilitation of peatlands can mitigate the carbon emitted as a result of historic peat extraction.

10.6.2 Current Phase (June 2020 – Present Day)

As peat extraction ceased in June 2020, carbon losses associated with peat extraction and the subsequent impact to climate are not relevant to this phase. However, the degraded bogs will continue to act as sources of these GHG until they are either rewetted/revegetated, the peat is removed or all the remaining peat has oxidised. In addition, there are GHG emissions from vehicles accessing the site.

The impact to climate from the Current Phase is considered major significant adverse as per the criteria in Table 10-4. This equates to a direct, short-term, negative and significant impact as per the EPA EIA terminology. Emissions from vehicles accessing the site will be minimal in nature.

10.6.3 Remedial Phase

The rehabilitation phase will include re-wetting the bogs which will aid in restoring the carbon store function and promote the carbon sink potential of the land. The carbon reductions associated with the Remedial Phase will result in a minor adverse and not significant impact as the Project has complied

with existing and emerging policy requirements and is in line to achieve Ireland's trajectory towards net zero. Using the EPA EIA terminology, the impact to climate is direct, long-term, beneficial and not significant.

10.7 Significance of Effects

10.7.1 Peat Extraction Phase (July 1988 - June 2020)

The impacts on climate during the Peat Extraction Phase is considered long-term, direct, negative and significant in EIA terms.

10.7.2 Current Phase (June 2020 – Present Day)

As peat extraction ceased at the Application Site in 2020, carbon losses associated with peat removal and the subsequent impact to climate are not relevant to this phase. Emissions from vehicles accessing the Application Site will be minimal in nature. However, the degraded bogs will continue to act as sources of these GHGs until they are either rewetted/revegetated, the peat is removed or all the remaining peat has oxidised. In addition, there are GHG emissions from vehicles accessing the site.

The impact to climate from the Current Phase is considered major significant adverse as per the criteria in Table 10-4. This equates to a direct, short-term, negative and significant impact as per the EPA EIA terminology.

10.7.3 Remedial Phase

The rehabilitation phase will include re-wetting the bogs which will aid in restoring the carbon store function and promote the carbon sink potential of the land. The carbon reductions associated with the Remedial Phase will result in a minor adverse and not significant impact as the Project has complied with existing and emerging policy requirements and is in line to achieve Ireland's trajectory towards net zero. Using the EPA EIA terminology, the impact to climate is long-term, beneficial and not significant.

10.7.4 Summary

Table 10-9 details a summary of all identified impacts for the Project relating to climate.

Table 10-9 Assessment Classification Summary

Topic	Pre-Mitigation Effect (EPA, 2022 Classification)	Mitigation Section Reference	Residual Effect (EPA, 2022 Classification)	EIA significance Threshold
Peat Extraction Phase				
Carbon emissions from removal of peat and loss of carbon sink	Direct, long-term, negative, significant	No mitigation	Direct, long-term, negative, significant	significant
Vehicle emissions	Direct, long-term, negative, significant	No mitigation	Direct, long-term, negative, significant	significant

Topic	Pre-Mitigation Effect (EPA, 2022 Classification)	Mitigation Section Reference	Residual Effect (EPA, 2022 Classification)	EIA significance Threshold
Current Phase				
Carbon emissions from removal of peat and loss of carbon sink	Direct, short-term, negative, significant	No mitigation	Direct, short-term, negative, significant	significant
Vehicle emissions	Direct, short-term, negative, significant	No mitigation	Direct, short-term, negative, significant	significant
Remedial Phase				
Rehabilitation of peatland areas and restore of carbon sink potential	Long-term, direct, beneficial, not significant	No mitigation	Long-term, direct, beneficial, not significant	not significant

10.8 Cumulative and In-Combination Effects

The ISEP and TII guidance on which the assessment is based states that "*the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative*".

The GHG emissions associated with peat extraction and ancillary activities and the loss of the carbon sink potential of the land has been carried out in this assessment with the predicted emissions compared with Ireland's climate targets and emissions ceilings.

Cumulative impacts to climate associated with development in the 1935 – 1988 period include historic removal of peat and the associated loss of the carbon sink potential of the land. The impact to climate as a result of works at the Application Site from 1935 – 1988 are similar to those discussed for the Peat Extraction Phase (i.e July 1988 – June 2020). While no detailed calculations in relation to tonnages of carbon have been conducted for the 1935 – 1988 period, it is likely that the impact to climate was long-term, negative and significant. The cumulative impact of peat extraction and ancillary activities from the commencement of works at the Application Site in 1935 up until peat extraction ceased in 2020 likely had a long-term, negative and significant impact on climate.

However, it should also be noted that in line with the Applicant's vision to assist in achieving a climate neutral Ireland by 2050, it is intended to utilise the Application Site for both peatland rehabilitation and wind energy infrastructure and to facilitate environmental stabilisation of the Application Site and the optimisation of climate action benefits. Bord na Móna Powergen Ltd. are proposing a wind energy development consisting of 47 no. turbines at the Application Site. A separate EIAR and accompanying NIS are being undertaken for the proposed Ballydermot Wind Farm development. At the time of writing, the planning application for this development has not yet been submitted to An Coimisiún

Pleanála, therefore a decision had not yet been made by An Coimisiún Pleanála with regards this application.

Additionally, Lodge Bog has undergone rehabilitation as part of the Peatland Climate Action Scheme (PCAS) which began in 2022 and was largely completed in 2023. In total 365.7 ha of Lodge Bog underwent decommissioning and rehabilitation. This 365.7 ha area is no longer an active carbon sink but is undergoing rehabilitation of it's carbon store potential. Research by Wilson et al. (2013) has indicated that rehabilitation of peatlands can mitigate the carbon emitted as a result of peat extraction. However, the research notes that the carbon sink potential is not equivalent to the original sink potential of undisturbed peatlands. The CO_2 reductions take a significant number of years to develop as such the CO_2 reductions associated with Lodge Bog have been included in the Remedial Phase assessment discussed in Section 10.4.4 for the full Application Area as the benefit of the reductions will not be fully recognised until further into the future.

Table 4-10 of Chapter 4 sets out the areas for rehabilitation measures at the Application Site in addition to the 365.7 ha of Lodge Bog that have been rehabilitated to date under PCAS. Using the IUCN UK National Committee Peatland Code Bog Emissions & Carbon Calculator v2.3 calculation spreadsheet (2025) in conjunction with a rehabilitation area of 4,177 ha allows the CO_2 reduction to be calculated. The CO_2 reductions will increase over time as the carbon store of the land returns. In the first 0 – 5 year period there is the potential for a reduction of 47,611 tCO_2e. By years 95 – 100 there is the potential for a total cumulative reduction of 952,267 tCO_2e.

The cumulative impact of providing a carbon sink within the re-wetted peatland and the carbon savings as a result of renewable energy generated by the proposed Ballydermot Wind Farm (should it be granted planning permission) would result in a minor adverse, not significant impact to climate using the ISEP and TII criteria in Table 10-4, as the proposed Ballydermot Windfarm will comply with existing and emerging policy requirements and is in line with Ireland's trajectory towards net zero. This equates to a significant, long-term beneficial impact to climate using the EPA EIA terminology and would assist in the national goal of achieving a climate neutral Ireland by 2050 as set out in the Climate Action and Low Carbon Development (Amendment) Act 2021.

10.9 Conclusion

This chapter of the rEIAR describes and assesses the residual direct and indirect climate impacts of peat extraction and ancillary activities, at the Application Site. The climate impact assessments have been prepared for the Peat Extraction Phase, the Current Phase and the Remedial Phase.

For the purposes of this assessment, while the activities assessed have occurred over the past decades, beginning in July 1988 and continuing to present day, impacts have been assessed against the most recently published climate guidance and policies which are likely more stringent than historical policies from previous years. Therefore, if it can be determined that, based on the most recent standards, if no significant effects occurred as a result of the Project, then it is unlikely that significant impacts occurred based on historical standards. The climate impact assessment comprised a quantitative assessment of the carbon emissions as a result of the peat extraction and ancillary activities.

Historic climate data was reviewed in reference to Ireland's weather for the surrounding area of the Application Site over the period July 1988 to present day and was used to establish the baseline conditions for 1988. Climate is defined as the average weather over a period of time, whilst climate change is a significant change to the average weather. Climate change is a natural phenomenon but in recent years human activities, which have resulted in the release of GHGs, have impacted on the climate. Climate change has led to an increase in the frequency of extreme weather conditions such as storms, floods and droughts. Historic National greenhouse gas (GHG) emissions published by the Environmental Protection Agency (EPA) were also reviewed and used to inform the climate baseline

assessment. National greenhouse gas (GHG) emissions are required to meet EU specific targets, however Ireland's annual GHG emissions have been in exceedance of these targets thus far.

Peat Extraction Activities (July 1988 – June 2020)

The CO_2 emissions associated with the peat extraction and ancillary activities over the period 1988 – 2020 were calculated. On average over this 32-year period there was 89,539 tonnes of CO_2 per annum released from the Application Site. Annually this equates to 0.045% of Ireland's 2026 – 2030 carbon budget of 200 $MtCO_2e$ or 0.059% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$.

There were also GHG emissions associated with vehicles accessing the Application Site, this includes HGV emissions from vehicles removing peat from site to end users and site workers. Over the 32-year Peat Extraction Phase an estimated 685 tCO_2e on average per annum was released from vehicle emissions. This equates to 0.011% of Ireland's 2030 Transport sector emissions ceiling, or 0.0003% of Ireland's 2026 – 2030 carbon budget of 200 tCO_2e and 0.0005% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$.

The removal of the carbon store of the Application Site and the subsequent release of CO_2 as a result of peat extraction and ancillary activities during the Peat Extraction Phase resulted in a major significant adverse impact to climate as per the ISEP and TII criteria. Vehicle GHG emissions also resulted in a significant adverse impact to climate. This equates to a long-term, negative and significant impact to climate using the EPA EIA terminology.

Current Phase (June 2020 – Present Day)

As peat extraction ceased at the Application Site in June 2020, carbon losses associated with peat removal and the subsequent impact to climate are not relevant to this phase.

However, areas of degraded bog will continue to act as sources of these GHG until they are either rewetted/revegetated, the peat is removed or all the remaining peat has oxidised. In addition to the consideration of the loss of a sink due to the dewatering/removal of vegetation, consideration must be given to the dewatered peat now being a source of CO_2e. The Current Phase of the Project has the potential to emit approximately 6,265 tCO_2e each year until the land is rewetted or revegetated or developed into an alternative land use. In the context of Ireland's carbon budgets, this annual emission equates to 0.003% of Ireland's 2026 – 2030 carbon budget of 200 $MtCO_2e$ or 0.004% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$.

There is the potential for some minor GHG emissions associated with vehicles accessing the Application Site for removal of stockpiled peat or for monitoring works. During the Current Phase an estimated 106 tCO_2e on average per annum was released from vehicle emissions. This equates to 0.002% of Ireland's 2030 Transport sector emissions ceiling, or 0.0001% of Ireland's 2026 – 2030 carbon budget of 200 tCO_2e and 0.0001% of Ireland's more stringent 2031 – 2035 carbon budget of 151 $MtCO_2e$.The impact to climate from the Current Phase is considered major significant adverse as per the ISEP and TII significance criteria. This equates to a short-term, negative and significant impact as per the EPA EIA terminology.

Remedial Phase

The primary focus of the Final and Draft BnM Cutaway Bog Decommissioning and Rehabilitation Plans is re-wetting the bogs which will aid in restoring the carbon store function. The CO_2 reductions will increase over time as the carbon store of the land returns. In the first 0 – 5 year period there is the

potential for a reduction 47,611 tCO_2e. By years 95 – 100 there is the potential for a total cumulative reduction of 952,267 tCO_2e.

The purpose of the Remedial Phase of the Project is in line with a number of key actions and priorities within CAP24 and CAP25 in relation to the rehabilitation of peatlands, specifically those within the mid-lands area. With the rehabilitation of the carbon sink potential of the land, albeit, to a lesser extent than the potential prior to the historic removal of the peat, the project will aid in Ireland's trajectory towards net zero by 2050.

Using the ISEP and TII assessment criteria, the Remedial Phase of the Project is considered minor adverse and not significant as the Project has complied with existing and emerging policy requirements and is in line with Ireland's trajectory towards net zero. Using the EPA EIA terminology, the impact to climate is long-term, beneficial and not significant.