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15. CLIMATE

15.1 INTRODUCTION

15.1.1 Background & Objectives

This chapter of the remedial EIAR describes and assesses the residual direct and indirect climate effects of peat extraction and ancillary activities, at the Application Site (made up of Derryhinch, Drumman, Derryarkin, Ballybeg and Toar Bogs).

The climate impact assessments have been prepared for the Peat Extraction Phase (1988 – June 2020), the Current Phase (June 2020 – present day) and the Remedial Phase (present day onwards) of the Project.

As discussed in Chapter 1, historical impacts associated with the Peat Extraction Phase have been assessed from 1988 (the latest date for the transposition of the Environmental Impact Assessment (EIA) Directive into Irish law).

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, 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 the Application Site can indicate that no significant effects occurred based on the most recent policies then it is unlikely that significant impacts occurred based on historical policies.

15.1.2 Statement of Authority

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

Sarah Berry is a Principal Climate Consultant in the Air Quality and Climate section of AWN Consulting, a Trinity Consultants Company. She holds a BSc in Physical Geography from the University of Leeds. She has 9 years' experience in Climate change and sustainability, with expertise in Greenhouse gas permitting, accounting and verification. Her experience includes conducting strategic sector-specific GHG audits across a range of industries (data centres, industrial facilities, hospitals, manufacturing, power stations and airports). She has prepared climate chapters for EIARs for proposed developments across Ireland including large residential developments, windfarms, industrial developments and wastewater treatment works. She has also contributed to remedial EIAR substitute consent applications for several projects.

This chapter was reviewed by 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.

15.1.3 Project Description

A full description of the Project is provided in Chapter 4 of this remedial EIAR. A brief summary pertaining to Climate for the Project Phases, as detailed in Section 4.7 in Chapter 4, is provided in the following sections.

15.1.3.1 Peat Extraction Phase: (July 1988-June 2020)

Site preparation works, including the installation of drainage channels, commenced within the Application Site in 1950. This was followed by industrial-scale peat extraction, which began in 1958 and continued across the Application Site for several decades. Following the date of the required transposition of the EIA Directive into Irish law in 1988, peat extraction activities continued across the Application Site. Peat extraction ceased in June 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.

15.1.3.2 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 significantly less than during the Peat Extraction Phase. Activities included the decommissioning of peat stockpiles which was completed in 2021, and removal and transportation off site of any remaining peat stockpiles. 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.

15.1.3.3 Remedial Phase

It is a requirement of 'Condition 10 Cutaway Bog Rehabilitation' of the Integrated Pollution Licence (IPC) Reg No. P0501-01 that following decommissioning of use of all or part of their bogs, the Applicant, prepares (to the satisfaction of the EPA) and implements a Cutaway Bog Decommissioning and Rehabilitation Plan – see Appendix 4-3 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.

15.2 METHODOLOGY

15.2.1 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 2 – remedial EIAR Methodology.

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

15.2.2 Assessment Criteria

15.2.2.1 Relevant Climate Guidelines, Policies and Legislation

Climate related policy and legislation have 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.

15.2.2.1.1 Legislation

The Climate Action and Low Carbon Development Act 2015 (Government of Ireland, 2015) provides the legislative basis for 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 defined in the 2015 Act (as amended) as the ‘*national transition objective*’. The Act made provision for a National Mitigation Plan, and a National Adaptation Framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council, with the function to advise and make recommendations on the preparation of the national mitigation and adaptation planning, and compliance with existing climate obligations.

The Climate Action and Low Carbon Development (Amendment) Act 2021 (Government of Ireland, 2021) strengthens this framework and provides for Ireland’s transition to a climate resilient and climate neutral economy by 2050. The 2021 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 2021 Act should be read in conjunction with the 2015 Act and together are referred to herein as the “Climate Act”.

Section 15 of the 2015 Act, as amended by the 2021 Act, sets out the duties imposed by certain bodies, including local authorities and An Coimisiún Pleanála (ACP). It requires that, insofar as practicable, such bodies perform their functions in a manner consistent with:

- (a) *the most recent approved Climate Action Plan,*
- (b) *the most recent approved National Long-Term Climate Action Strategy,*
- (c) *the most recent approved National Adaptation Framework and approved sectoral adaptation plans,*
- (d) *the furtherance of the National Climate Objective, and*
- (e) *the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.”*

The 2021 Act replaces the requirement for a National Mitigation Plan with an enhanced framework centred on the Climate Action Plan and National Long-Term Climate Action Strategies. It also introduces a requirement for each local authority to prepare a five-year Climate Action Plan, setting out mitigation and adaptation measures.

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 15-1. The carbon budget may 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 sectoral emission ceilings for 2030 were published July in 2022 and are shown in Table 15-2.

The Application Site falls within the LULUCF (Land Use, Land Use Change, and Forestry) sector, which does not currently have an assigned sectoral 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, peat extraction and ancillary activities during the Peat Extraction Phase did not require compliance with any sectoral emissions ceilings or carbon budgets.

Table 15-1: 5-Year Carbon Budgets

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO ₂ e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO ₂ e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO ₂ e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 15-2: Sectoral Emission Ceilings 2030

Sector	Baseline (Mt CO ₂ e)	Carbon Budgets (Mt CO ₂ e)		2030 Emissions (Mt CO ₂ e)	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

Sector	Baseline (Mt CO ₂ e)	Carbon Budgets (Mt CO ₂ e)		2030 Emissions (Mt CO ₂ e)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021- 2025	2026- 2030		
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

15.2.2.1.2 Policy

National Policy

The latest iteration of the Government of Ireland's **Climate Action Plan (CAP25)** (Government of Ireland, 2025) was published in April 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 restoration 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 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 Bord na Móna EDRRS and LIFE People and Peatlands, and*
2. *30,000 ha of additional exploited peatlands rehabilitated.*

Regional Policy

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

Offaly County Development Plans

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

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 1987 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.

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 CO₂ 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.

Offaly County Council Climate Change Action Plan (2024 – 2029)

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 within the Offaly County Council Climate Change Action Plan 2024-2029 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)”.

Westmeath County Council Development Plans

The Westmeath County Development Plan 2021-2027 includes the following overarching guiding principle in relation to climate change:

“To transition to a low carbon and climate resilient County, with an emphasis on reduction in energy demand and greenhouse gas emissions, through a combination of effective mitigation and adaptation responses to climate change.”

Peatlands are specifically referenced throughout the 2021-2027 Plan, with the wind energy policy objective Core Policy Objective (CPO) 10.145 being of relevance in relation to peatlands and climate:

“To strictly direct largescale energy production projects, in the form of wind farms, onto cutover cutaway peatlands in the County, subject to environmental, landscape, habitats and wildlife protection requirements being addressed..

Developments sited on peatlands have the potential to increase overall carbon losses. Proposals for such development should demonstrate that the following has been considered:

- *Peatland stability; and*
- *Carbon emissions balance”.*

CPO 10.148 of the wind energy policy objective recognises the need to:

“Support the preparation of a Management Plan for the Industrial Peatlands in the County, in consultation with stakeholders and adjacent Local Authorities. The Plan should focus on recreational opportunities, renewable energy, hydrological and ecological considerations subject to environmental assessment and the requirements of Article 6 of the Habitats Directive.”

Regional Policy Objective 7.29 which relates to climate action seeks to:

“Support collaboration between local authorities, the Bord na Móna Transition Team and relevant stakeholders and the development of partnership approaches to integrated peatland management for a just transition that incorporate any relevant policies and strategies such as the Bord na Móna Biodiversity Plan 2016-2021 and the national Climate Mitigation and Adaptation Plans. This shall include support for the rehabilitation and/or re-wetting of suitable peatland habitats.”

The Westmeath County Development Plan (2014 – 2020) contained a number of strategic aims and policies relevant to the Application Site, particularly in relation to peatlands, renewable energy and rural development.

Chapter 9 Climate includes climate change policy and objectives. Policy P-CC1 seeks to:

“Support the implementation of the National Climate Change Strategy and to facilitate measures which seek to reduce emissions of greenhouse gases”.

Relevant objectives to the regularisation of peat extraction and the rehabilitation measures proposed for the cutover peatland include:

“O-CC1: To prepare... a Climate Change Strategy for County Westmeath, during the lifetime of the plan.

O-CC2: To adopt sustainable planning strategies through the integration of land use and transportation as a means of reducing greenhouse gas emissions.

O-CC3: To raise awareness of climate change and its potential impacts among businesses, local communities and the public

...

O-CC5: To promote and encourage new developments to mitigate against, and adapt to, where possible the impacts of climate change through the location, layout and design of the development...”

The Westmeath County Development Plan 2008-2014 contains a range of objectives and policies relevant to peatlands, cutaway bogs, renewable energy and future land use, all of which are pertinent to the Application Site.

The 2008-2014 CDP strongly supports all national and international incentives for limiting emissions of greenhouse gases and encourages the development of renewable energy resources.

Relevant policies include:

Policy P-RDE7 states *“It is the policy of the Planning Authority to promote renewable forms of energy production where it is consistent with the proper planning and development of an area...”*.

Policy P-EH19 states *“It is the policy of Westmeath County Council to ensure the conservation of the county’s peatlands in order to minimise the negative impact on natural diversity and the archaeological and cultural heritage of the county”*.

Policy O-EH16 *“to exercise control of peat extraction both individually and cumulatively which would have significant impacts on the environment as provided for under SI 364 of 2005”*.

Policy O-EH19 *“To plan and prepare for the future use of large industrial bog sites when peat harvesting finishes and to encourage a balanced approach to the redevelopment of cutaway bogs. There is potential for habitat creation such as woodlands, grasslands, and wetlands. There is also potential for amenity value with development of parklands and economic uses such as agricultural grasslands, forestry and wind energy”*.

The Westmeath County Development Plan (WCDP) 2002–2008 was adopted by the Council on 15 April 2002. The Plan contains a number of objectives and policies relevant to the historic use of the Derrygreenagh Bog and the wider peatlands of County Westmeath. There are no specific policies relating to climate change.

The Westmeath County Development Plan (WCDP) 1994 was reviewed in relation to the Application Site. The Plan contains specific policy recognition of the importance of boglands within County Westmeath, both as an economic resource and as an amenity and heritage asset however, there are no specific policies relating to climate change.

The Westmeath County Development Plan 1986 supported the continued development of peatland resources for employment and energy production, while recognising the need to protect ecological interests in sensitive areas. Although climate change was not specifically addressed, the Plan provides historical context for peatland management and the former use of peatlands as an economic resource.

Westmeath County Council Climate Action Plan (2024 – 2029)

In addition to the County Development Plans, Westmeath County Council have published the *Westmeath County Council Climate Action Plan 2024 – 2029* (WCC, 2024). This plan outlines



Westmeath County Council's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. Westmeath County Council aims to reduce its direct carbon emissions by 51% by 2030 and supports the generation of renewable energy as part of this.

The Climate Action Plan (2024-2029) highlights the increasing risks posed by climate change to the county's infrastructure, residents, and businesses, particularly from extreme weather events such as flooding, heatwaves, and droughts. Pluvial and fluvial flooding are identified as significant risks due more intense rainfall events. Without mitigation, these events are projected to lead to the inundation of properties, damage to infrastructure, and disruptions to transport networks.

Meath County Council Development Plans

The Meath County Development Plan 2021 – 2027 (MCDP) came into effect on 3 November 2021 and sets out the policies, objectives and the overall strategy for the development of the County over the plan period. The Core Strategy (Chapter 2) of the MCDP identifies climate change as a cross-cutting theme underpinning the plan and recognises the central role of Meath County Council in supporting climate action measures at European and national levels, including the European Green Deal, the Climate Action and Low Carbon Development Act (2015), and the Just Transition Fund.

The MCDP includes overarching climate related objectives which align with higher-tier legislation and national climate policy including:

- 1. Supporting the implementation of the Climate Action Plan 2019 and facilitating measures to reduce greenhouse gas emissions across key sectors including electricity, enterprise, the built environment, transport, agriculture and waste.*
- 2. Supporting the National Climate Change Adaptation Framework through the County Development Plan and the preparation of a Climate Change Adaptation Plan in collaboration with relevant stakeholders.*

Drawing on the National Planning Framework (NPF), the Regional Spatial and Economic Strategy (RSES) and the National Peatlands Strategy 2015–2025, the MCDP highlights the strong relationship between the sustainable management of peatlands and climate action, biodiversity protection and ecosystem services.

The MCDP recognises that some cutover peatlands have the potential to accommodate complementary uses, including renewable energy generation, habitat enhancement and public amenity, subject to appropriate environmental safeguards.

The Meath County Council Development Plan 2013-2019 includes the following overarching guiding principle in relation to climate change (Core Principle 11): *“To integrate climate change considerations into the policies and objectives of Meath County Council and its key stakeholders”.*

Relevant policies include:

- EC POL 1: *To facilitate energy infrastructure provision, including the development of renewable energy sources at suitable locations, so as to provide for the further physical and economic development of Meath.*

EC POL 3: *To encourage the production of energy from renewable sources, such as from biomass, waste material, solar, wave, hydro, geothermal and wind energy, subject to normal proper planning considerations, including in particular, the potential impact on areas of environmental or landscape sensitivity and Natura 2000 sites.*

EC POL 20: *To encourage the development of wind energy, in accordance with Government policy and having regard to the Landscape Characterisation Assessment of the County and the Wind Energy Development Guidelines (2006).*

The Meath County Council Development Plan 2013-2018 contains an objective and policy relevant to peatlands, cutaway bogs, renewable energy and future land use, which is pertinent to the Application Site.

NH POL 11: *To seek to ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, archaeological, cultural and educational significance.*

NH OBJ 4: *To work in partnership with relevant stakeholders on a suitable peatland site(s) to demonstrate best practice in sustainable peatland conservation, management and restoration techniques and to promote their heritage and educational value subject to Ecological Impact Assessment and Appropriate Assessment Screening as appropriate.*

The MCDP 2013-2019 reflects a period of policy transition, with a clear shift towards renewable energy, greenhouse gas reduction and enhanced environmental protection. The Plan also acknowledges the declining role of peat as a fuel source.

Meath County Development Plan 1994, 2001 and 2007 - 2013

The Meath County Development Plans adopted in 1994, 2001 and 2007-2013 provide historical planning context for the Application Site and its former peat extraction activities. The 1994 Plan supported industrial development and rural employment generation, including the development of peat resources, while recognising the need to protect environmentally sensitive areas. The 2001 Plan continued to recognise peat extraction as an established land use within the county and acknowledged its potential environmental and landscape effects, promoting the management of development to protect environmental quality and landscape character. The 2007-2013 Plan placed greater emphasis on the protection of natural heritage, landscape character and peatland resources, including the conservation of designated peatlands and the avoidance of development that could adversely affect sensitive landscapes and heritage assets.

Collectively, these Plans demonstrate an increasing emphasis on environmental protection and sustainable land management over time. While none contained specific climate change policies, they recognised the environmental importance of peatlands and provide relevant historical context for the management of peatland landscapes, which are now recognised as important carbon stores and contributors to climate regulation.

Meath County Council Climate Action Plan (2024 - 2029)

The *Meath County Council Climate Action Plan 2024-2029* highlights the increasing risks posed by climate change to the county's infrastructure, residents, and businesses, particularly from extreme weather events such as flooding and windstorms. Additionally, drought events have



been identified as a risk for the Meath region which will impact agriculture and crop growing. Protecting the built environment, such as public infrastructure, from the impact of climate change hazards is a key priority, this will involve appropriate planning, asset management and preparedness as well as liaison with other key stakeholders, such as the OPW on flood risk.

The Meath County Council Climate Action Plan 2024–2029 outlines Meath County Council's objectives to mitigate greenhouse gas emissions and strategies to prepare for and adapt to climate change. The plan encompasses actions across several thematic areas, including Energy & Buildings, Transport, Flood Resilience, Nature-Based Solutions, Circular Economy & Resource Management, and Citizen Engagement. This aligns with the Government's National Climate Objective, which aims to achieve, by no later than 2050, a transition to a climate-resilient, biodiversity-rich, environmentally sustainable, and climate-neutral economy. The Meath County Council Climate Action Plan sets ambitious targets, including a 51% reduction in the Council's GHG emissions by 2030 and a 50% improvement in energy efficiency within the same timeframe. Additionally, it seeks to make County Meath a climate-resilient region by reducing the impacts of future climate change-related events and actively engaging and informing communities on climate action.

15.2.2.1.3 Guidance

The quantity of carbon released 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 United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC) when setting emissions targets 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 CO₂ 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 or EU 20-20-20 targets (IPCC 2006). The altering of the natural balances in carbon's biogeochemical cycle by removing the peat, dewatering, milling and burning of the peat as an energy source is considered an anthropogenic emission.

15.2.2.2 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 (CH₄) 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 act as a long-term CO₂ sink due to the persistently high-water table which creates conditions whereby the amount of CO₂ 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 CH₄ accounting for around 23% of global emissions. Again, the position of the water table is important with a decrease in CH₄ emissions associated with a lower water table. For pristine peat, plant mediated transport is the most important pathway for CH₄ movement from the anoxic peat to the atmosphere, accounting for between 50-97% of total CH₄ transported (Wilson & Farrell, 2007).

In relation to harvested peatlands, CO₂ dynamics undergo significant changes when a peatland is subject to peat extraction. 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 CO₂. The installation of drainage ditches and the removal of the vegetation layer at the surface results in reduced or zero CH₄ emissions (or even a CH₄ 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 CH₄ that is provided by aerenchymatic plants (Wilson & Farrell, 2007).

The report also reviewed some studies that found that it was possible to restore 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 CO₂ 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 CH₄ 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 CO₂-C balance ($tCO_2-C\ ha^{-1}\ yr^{-1}$) was negative for all microsites (i.e. a source of C). In relation to CH₄ 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 CO₂ emissions and will also promote recolonization by appropriate wetland vegetation and, over time, may lead to the return of the CO₂ 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 CH₄ are offset by CO₂ 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 CO₂-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. Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers.

15.2.3 Scoping & Consultation

The scope for this remedial EIAR has been informed by consultation with statutory consultees, environmental authorities and other relevant stakeholders including the Department of Housing, Local Government and Heritage, the Environmental Protection Agency, Transport Infrastructure Ireland, Natural Capital Ireland, and the Sustainable Energy Authority of Ireland, as outlined in Section 2.4 of Chapter 2 of the remedial EIAR. Scoping for the Project was undertaken in June 2026. No specific consultation with regard to climate was conducted.

15.2.4 Study Area

In relation to climate, the delineation of a specific study area is not as clearly defined as for other environmental disciplines, as climate effects are not geographically constrained. Climate Impacts are therefore assessed in the context of Ireland's compliance with relevant national and EU climate targets, legislation and policy objectives. Therefore, the study area is defined as the Republic of Ireland.

15.2.5 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 - Derrygreenagh Bog Group IPC Licence Ref No. P0501-01 (<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 CO₂ 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.

15.2.6 Assessment Methodology

For the purposes of this assessment, the definition of greenhouse gases (GHGs) outlined in Council Directive 2009/28/EC has been adopted. Annex V, C. Methodology Point 5 identifies the relevant greenhouse gases as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).

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 (CO₂) as the basic unit (GWP = 1) and methane gas (CH₄) has a global warming potential equivalent to 27 units of CO₂ and nitrous oxide (N₂O) has a GWP100 of 273.

For the purposes of calculating GHG emissions only CO₂, CH₄ and N₂O (combined as CO₂e) will be taken into account. Fluorinated gases (F-gases) are not considered, as there are no significant sources of F-gases from the Project.

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).

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 CO₂ 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 the Peat Extraction Phase 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. The calculations in relation to carbon emissions were undertaken based on the areas of peat extracted, provided by the Applicant, all of which is detailed in Section 4.4 to 4.7 in Chapter 4 of this remedial EIAR. The calculations are detailed in the following section.

As mentioned above, the carbon emission calculations have been undertaken based on the Intergovernmental Panel on Climate Change (IPCC) guidelines. The assessment is based on the following key methodologies:

- 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

15.2.6.1 Carbon Emissions in Peatlands During Peat Extraction

The emission factors recommended in the 2006 guidelines for use in Ireland was 0.2 tCO₂-C ha⁻¹ yr⁻¹ for nutrient-poor bogs and 1.1 tCO₂-C ha⁻¹ yr⁻¹ for nutrient-rich bogs. The 2013 guidance updated these emission factors to a single higher emission factor of 2.8 tCO₂-C ha⁻¹ yr⁻¹ for peat soils managed for extraction or following abandonment.

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:

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

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

Where:

$CO_2 - C_{on-site}$ = annual on-site CO₂-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)

44/12 = molecular weight conversion factor used to convert carbon (C) to carbon dioxide (CO₂)

15.2.6.2 N₂O Emissions from Peatlands During Peat Extraction

Nitrous oxide (N₂O) emissions associated with peat extraction were based on Equation 7.7 of the 2006 IPCC guidelines (2006a) and outlined below. The calculated N₂O emissions were converted to a CO₂e figure by multiplying by 273.

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

Where:

$N_2O_{peat\ extraction}$ = direct N₂O emissions from peatlands managed for peat extraction, tonnes N₂O yr⁻¹

A = area of peat soils managed for peat extraction, ha

EF = emission factor for drained wetlands organic soils, kg N₂O ha⁻¹ yr⁻¹ (with a default value of 1.8 kg ha⁻¹ yr⁻¹)

15.2.6.3 CH₄ Emissions from Drainage Ditches

The formation of drainage ditches associated with peat extraction gives rise to methane (CH₄) emissions. These emissions have been estimated using 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 CH₄ emissions were converted to a CO₂e figure by multiplying by 27.

$$F_{CH_4} = (A \times EF)$$

Where:

F_{CH4} = total annual flux of CH₄ from ponds and ditches, (kg CH₄ yr⁻¹)

A = Area (ha) of the drainage ditches

EF = Emission factor for waterbody (default of 416 kg CH₄ ha⁻¹ yr⁻¹)

15.2.6.4 Carbon Reductions for Peatland Restoration

The rewetting of peatlands as part of the Remedial Phase will contribute to 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 estimation of CO₂e emission reductions associated with peatland restoration has been carried out using the Emissions Calculator v2 and accompanying methodology developed by the International Union for Conservation of Nature (IUCN) UK National Committee UK Peatland Programme, as set out in the 'Peatland Code Version 2.1' (2024).

The emissions figures used within the IUCN UK National Committee Emissions Calculator v2 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 10% 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 restoration activities.

The calculator requires input relating to the total area of peatland subject to restoration and the baseline condition (pre-restoration) condition of the peatland. Based on these inputs, the model estimates the potential CO₂e reductions over a 0 – 100 year period for the Application Site at 5-year intervals.

15.2.6.5 Significance Criteria for Climate

In accordance with the Institute of Sustainable Environmental Professionals (ISEP) (formerly known as the Institute of Environmental Management and Assessment (IEMA)) guidance (ISEP, 2022) 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 effects of GHG emissions resulting from a given project is based on how it contributes to the overall GHG emissions within the sectoral and national carbon budgets and whether that project contributes or not to the CAP25 objective for Ireland to achieve carbon neutrality by 2050, that is that a project contributes to reducing GHG emissions.

This process requires an assessment of the quantified GHG emissions relative to the sensitivity of the receiving environment (in this case Ireland's national GHG targets or National Climate Objective). It also considers the extent to which the Project incorporates significant mitigation measures to reduce GHG emissions.

Both the ISEP and TII guidance documents are explicit in this concept, however the TII document also highlights the issue of significance in the context of how a project mitigates its GHG emissions.

ISEP guidance (2026) highlights the importance of mitigation in determination of significance, committing the project to go further than minimum regulatory compliance. It determines embodied carbon must be addressed and generalised measures cannot be relied upon to materially reduce significance. Where no sufficient and meaningful mitigation is proposed which supports an applicable 1.5°C or net zero compatible trajectory, beyond minimum compliance with current regulations, this would typically indicate a significant adverse effect.

In order to streamline the process and provide accountability, the criteria outlined in PE-ENV-01104 (TII, 2022) and reproduced in Table 15-3 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.

Table 15-3: 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.

Effects	Significance Level	Description
Beneficial	Beneficial	- The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. - The project has gone well beyond existing and emerging policy requirements; and - Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

15.2.7 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.

15.3 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. 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 – 2024 have been discussed in the following section.

15.3.1 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 (CO₂), methane (CH₄) and nitrous oxide (N₂O) 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 in recent years 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 CO₂ 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*' (EPA, 2026a) reviews national emissions in 2025 and trends in emissions from 1990.

Data published in July 2026 (Environmental Protection Agency, 2026a), indicates that Ireland exceeded, without the use of flexibilities, its 2025 annual limit set under EU's Effort Sharing Regulation (ESR) (EU 2018/842) by 5.01 MtCO₂e. However, the reported emissions for 2025 represent the third consecutive year in which Ireland's emission were below 1990 levels by 5.5%. Emissions Trading Scheme emissions have decreased by 52.4% or 11.8 MtCO₂e compared to 2005 and Effort Sharing Regulation emissions decreased by 11.8% or 5.6 MtCO₂e. Ireland is now a net 3,198 ktCO₂e distant from its target under the Effort Sharing Regulation.

The EPA estimate that 2025 total national GHG emissions, excluding LULUCF, have decreased by 2.3% on 2024 levels to 52.65 MtCO₂e. The sector with the highest emissions in 2025 was agriculture at 38.7% of the total, followed by transport at 22.0%. For 2025, total national emissions (including LULUCF) were 55.16 MtCO₂e (Table 15-4). Agriculture emissions decreased by 0.2% in 2025, primarily due to a 3.3% reduction in cattle herd numbers. However, a 12.7% increase in fertilizer nitrogen lessened the impact of the herd reduction on emissions. Greenhouse gas emissions from the transport sector decreased by 1.5% in 2025, the increase in the use of biofuels contributed to the majority of this emission reduction in addition to the increasing number of electric vehicles on Irish roads. Emissions from the energy industries sector decreased for the fourth consecutive year by 7.1% in 2025. This reduction can be attributed to an increase in imported electricity as well as increased renewable generation. Renewables accounted for 40.6% of electricity generation in 2025.

The current estimates of National greenhouse gas emissions (including LULUCF) in 2025 are 14.5% below 2018 levels, at considerable variance from the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021 to 2025 Ireland has used 99.6% or 293.9 MtCO₂e of the 295 MtCO₂e Carbon Budget for the five-year period 2021-2025. This leaves 1.1 Mt CO₂e of the budget available to be carried over into budget 2 for 2026-2030. In order to achieve Ireland's climate ambition of a 51% reduction by 2030, annual emission reductions of over 10% are required for the next 5 years.

In relation to compliance with the sectoral emissions ceilings (SECs), the provisional GHG emissions estimates (see Table 15-4) indicate that four sectors, Buildings (Residential), Buildings (Commercial and Public), Agriculture and Other, have stayed within their sectoral emissions ceilings. The other three sectors, Electricity, Transport and Industry have exceeded their sectoral emissions ceilings. The EPA state that the National Climate objective of a 51% reduction by 2030 will be unattainable unless every sector meets its indicative percentage reduction target.

Table 15-4: Trends in National GHG Emissions 2021 – 2025

Sector <i>Note 1</i>	2021	2022	2023	2024	2025	Total	Sectoral Emissions Ceiling 2021-2025	% SEC 2021-2025 Used
	MtCO ₂ e							
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 <i>Note 2</i>	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%
<i>Note 1 Reproduced from latest emissions data from the EPA (EPA, 2026).</i>								
<i>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).</i>								

15.3.2 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 site that has meteorological data recorded for the 30-year period from 1979-2008. The monitoring station is located approximately 15 km northwest of the Application Site. Meteorological data recorded at Mullingar over the 30-year period is shown in Table 15-5. 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 15-5: 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



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
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
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 $\geq 0.2\text{mm}$	19	17	20	15	16	16	16	17	17	19	18	19	209
mean num. of days with $\geq 1.0\text{mm}$	15	13	15	11	12	11	11	13	12	14	13	14	154
mean num. of days with $\geq 5.0\text{mm}$	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



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
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
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

15.4 LIKELY SIGNIFICANT EFFECTS

15.4.1 Do-Nothing Option

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 further impact on the 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 Bord na Móna 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’ option was not the chosen option. Peat extraction and ancillary activities have continued at the Application Site from July 1988 until June 2020. 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 remedial EIAR.

As part of Bord na Móna’s statutory obligations under IPC licence requirements, 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 these plans is included in the impact assessment below.

15.4.2 Peat Extraction Phase (July 1988 - June 2020)

Lowering the water table increases the oxidation of the peat and in turn causes a rise in CO₂ 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 have reduced 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 CO₂ sink to a net CO₂ source (Wilson 2013).

Using the assessment methodology outlined in Section 15.2, the CO₂ 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 2,637 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, 1,270,192 tCO₂e was released during the Peat Extraction Phase. Over this 32-year period there was on average 39,693 tonnes of CO₂ per annum released from the Application Site. Annually this equates to 0.02% of Ireland's 2026 – 2030 carbon budget of 200 MtCO₂e or 0.026 % of Ireland's more stringent 2031 – 2035 carbon budget of 151 MtCO₂e (see Table 15-1).

There was also the potential for GHG emissions associated with vehicles accessing the Application Site, for site workers. However, the number of vehicles accessing the Application Site and their associated GHG emissions were not predicted to be significant in relation to Ireland's climate budgets and sectoral emissions ceilings (Table 15-1 and Table 15-2). GHG emissions from vehicles, in general, would have reduced as engine technologies and fuels improved over the 1988 – 2020 period. However, the primary source of GHG emissions throughout the Peat Extraction Phase was the extraction of peat and the subsequent loss of carbon sink.

The removal of the carbon store of the site and the subsequent release of CO₂ 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 15-3. This equates to a *long-term, direct, negative and significant effects* to climate using the EPA EIA terminology.

15.4.3 Current Phase (June 2020 – Present Day)

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 CO₂e. Renou-Wilson et al. (2018) studied a range of blanket and cutover raised bogs in Ireland in its assessment. Site-specific rates for CO₂ and CH₄ 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 CO₂ source and resulted in an average emission factor of 1.2 t CO₂-C ha⁻¹ yr⁻¹. In terms of CH₄ and N₂O, the net ecosystem exchange (NEE) (net CO₂ flux between land-atmosphere) was approximately neutral. Using the average emission factor of 1.2 t CO₂-C ha⁻¹ yr⁻¹ in conjunction with the area of the Application Site (2,637 ha) it can be concluded that there will be carbon emissions associated with the Current Phase of 3,033 tCO₂e per year. A conservative approach has been



taken in this assessment in assuming that the entire Application Site area is a current CO₂ source.

The Current Phase of the Project has the potential to emit approximately 3,033 tCO₂e 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 0.002 % of Ireland's 2026 – 2030 carbon budget of 200 MtCO₂e or 0.002 % of Ireland's more stringent 2030 – 2035 carbon budget of 151 MtCO₂e (see Table 15-1).

Other elements of the Current Phase are the removal of stockpiled peat, which was completed in 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. However, the number of vehicles accessing the Application Site will be minimal and GHG emissions associated with these are not predicted to be significant in relation to Ireland's climate budgets and sectoral emissions ceilings (Table 15-1 and Table 15-2).

The impact to climate from the Current Phase is considered *minor adverse* as per the criteria in Table 15-3 based on the drained bog being a carbon source. This equates to a *long-term, direct, negative and not significant effects* as per the EPA EIA terminology.

15.4.4 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. 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. As a result, the re-wetting activities of the rehabilitation phase as part of the Draft Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plan 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.

Table 4-7 of Chapter 4 sets out the areas for rehabilitation measures at the Application Site. Using the calculation spreadsheet from the IUCN UK National Committee UK Peatland Programme 'Peatland Code Version 2.1' (2024) in conjunction with a rehabilitation area of 2,509 ha allows the CO₂ reduction to be calculated. The CO₂ 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 28,792 tCO₂e. This has the potential to increase to a reduction of 575,838 tCO₂e in years 95 – 100.

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 restoration 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 Table 15-3, the Remedial Phase of the Project is considered **beneficial** and **not significant** 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, positive and not significant**.

15.5 CONTROL AND MONITORING MEASURES

15.5.1 Peat Extraction Phase (July 1988 – June 2020)

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

15.5.2 Current Phase (June 2020 – Present Day)

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

15.5.3 Remedial Phase

The assessment has determined that no significant adverse effects on climate are predicted to arise during the Remedial Phase. Accordingly, no specific climate mitigation or monitoring measures are required in respect of climate change or greenhouse gas emissions.

15.6 RESIDUAL EFFECTS

15.6.1 Peat Extraction Phase (July 1988 - June 2020)

The removal of the carbon store of the Application Site and the subsequent release of CO₂ as a result of peat extraction and ancillary activities during the Peat Extraction Phase resulted in a major significant adverse effects to climate as per the criteria in Table 15-3. This equates to a **long-term, direct, negative and significant effects** 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.

15.6.2 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.

The impact to climate from the Current Phase is considered **minor adverse** as per the criteria in Table 15-3. This equates to a **long-term, negative and not significant** effects as per the EPA EIA terminology. Emissions from vehicles accessing the site will be minimal in nature.

15.6.3 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 **beneficial** and **not significant** effect 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, positive and not significant*.

15.7 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.

15.8 CONCLUSION

This chapter of the remedial EIAR describes and assesses the residual direct and indirect climate effects 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 and continue 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, 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 GHG emissions published by the EPA were also reviewed and used to inform the climate baseline assessment. National 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 CO₂ 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 39,693 tonnes of

CO₂ per annum released from the Application Site. Annually this equates to 0.02 % of Ireland's 2026 – 2030 carbon budget of 200 MtCO₂e or 0.026 % of Ireland's more stringent 2031 – 2035 carbon budget of 151 MtCO₂e. The removal of the carbon store of the Application Site and the subsequent release of CO₂ 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. 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 CO₂e. The Current Phase of the Project has the potential to emit approximately 3,033 tCO₂e 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 0.002 % of Ireland's 2026 – 2030 carbon budget of 200 MtCO₂e or 0.002 % of Ireland's more stringent 2031 – 2035 carbon budget of 151 MtCO₂e.

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. However, the number of vehicles accessing the Application Site will be minimal and GHG emissions associated with these are not predicted to be significant in relation to Ireland's climate budgets and sectoral emissions ceilings. The impact to climate from the Current Phase is considered *minor adverse* as per the ISEP and TII significance criteria. This equates to a *long-term, negative and not significant* impact as per the EPA EIA terminology.

Remedial Phase

The primary focus of the Draft Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plan is stabilising the environment of the bogs, which will inherently aid in restoring the carbon store function. The CO₂ 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 28,792 tCO₂e. This has the potential to increase to a reduction of 575,838 tCO₂e in years 95 – 100.

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 restoration 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 beneficial 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, positive and not significant*.

15.9 REFERENCES

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