MWP

Environmental Impact Assessment Report (EIAR)

Chapter 08 Air Quality and Climate

Dernacart Wind Farm
110kV Substation and Grid Connection

Statkraft Ireland

October 2024

Contents

Tables

Figures

Appendices

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
23268	6011	A	01/10/2024	CB	CF	CF	Final

MWP, Engineering and Environmental Consultants
Address: Reen Point, Blennerville, Tralee, Co. Kerry, V92 X2T

www.mwp.ie

Disclaimer: *This Report, and the information contained in this Report, is Private and Confidential and is intended solely for the use of the individual or entity to which it is addressed (the "Recipient"). The Report is provided strictly on the basis of the terms and conditions contained within the Appointment between MWP and the Recipient. If you are not the Recipient you must not disclose, distribute, copy, print or rely on this Report. MWP have prepared this Report for the Recipient using all the reasonable skill and care to be expected of an Engineering and Environmental Consultancy and MWP do not accept any responsibility or liability whatsoever for the use of this Report by any party for any purpose other than that for which the Report has been prepared and provided to the Recipient.*

8. Air and Climate

8.1 Introduction

This chapter considers the potential effects on air quality and climate arising from the proposed development. A full description of the proposed development, development lands and all associated projects elements is provided in Chapter 2 of this EIAR. The nature and probability of effects on air quality and climate arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment;
- Prediction and characterisation of likely impacts;
- Evaluation of significance of effects;
- Consideration of mitigation measures.

8.1.1 Scope of Study

The scope of this study includes:

- A desktop review of EPA ambient air quality data;
- A review of local climatic conditions as provided by Met Eireann;
- A review of County Development Plans, Strategies and Policies;
- A review of National and International Plans, Strategies and Policies;
- A review of county council planning permissions;
- A review of local renewable infrastructure projects.

8.1.2 Competency of Assessor

This chapter was prepared by Claire Boylan BBS, BSc (Env Mgt), DipSci and Adv Dip Planning & Environmental Law. Claire is an experienced Environmental Scientist at Malachy Walsh and Partners (MWP), having worked for 6 years in the environmental sector. Claire has worked on a variety of infrastructure projects, environmental licensing applications, conducted environmental assessments and supported the delivery of a number of environmental deliverables including Environmental Impact Assessment (EIA) Screening Reports, Appropriate Assessment (AA), Natura Impact Statements (NIS) and Environmental Impact Assessment Reports (EIAR).

8.1.3 Guidelines and Legislation

8.1.3.1 Air Quality

The following legislation and published guidance has been consulted in undertaking this assessment:

- Clean Air Strategy (Government of Ireland 2023);
- Guidance on the assessment of dust from demolition and construction (IAQM 2024);
- Air Quality Assessment of Proposed National Roads - Standard (TII 2022a);

- Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document (TII 2022b)
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII 2009);
- UK Department of Environment Food and Rural Affairs (DEFRA) Part IV of the Environment Act 1995: Local Air Quality Management, LAQM.TG (16) (DEFRA 2018);
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) – LA 105 Air Quality (UKHA 2019); and
- World Health Organization (WHO) Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide Global Update 2005 (WHO 2005).

8.1.3.2 Climate

This assessment has been prepared in accordance with national guidelines, where available, in addition to international standards and guidelines relating to the assessment of Greenhouse Gas (GHG) emissions and associated climatic impact. References to legislation include amendments thereto. These are summarised below:

- DCCAE (2017) National Adaption Plan;
- DCCAE (2024) Climate Action Plan 2024;
- Department of Transport, Tourism and Sport (DTTAS) (2019) Transport – Climate Change Sectoral Adaption Plan;
- Climate Action and Low Carbon Development (Amendment) Act 2021 (No.46 of 2015) (hereafter referred to as the 2021 Climate Act);
- Offaly County Council Climate Action Plan 2024-2029;
- Offaly County Council's Climate Change Adaption Strategy 2019-2024;
- Offaly County Development Plan 2021-2027;
- Laois County Council Development Plan 2021 – 2027;
- Laois County Council Wind Energy Strategy 2021 – 2027;
- Laois County Council Climate Action Plan 2024 – 2029;
- European Commission (EC) (2014) 2030 Climate and Energy Policy Framework;
- Transport Infrastructure Ireland (TII) (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes;
- UKHA (2019) Design Manual for Roads and Bridges: A 114 – Climate;
- European Green Deal (EC, 2022);
- Kyoto Protocol (United Nations Framework Convention on Climate Change(UNFCC, 1997);
- Paris Agreement (UNFCC, 2015);
- The Climate Action and Low Carbon Development (Amendment) Act 2021;
- Climate Action Plan 2023 (CAP) (DCCAE, 2022);
- Glasgow Climate Pact (COP26);
- Summary of Global Climate Action at COP 27 (UNFCC, 2022).

8.1.3.3 Local Policy and Guidelines

The Offaly County Council Climate Action Plan 2024 – 2029 and Laois County Council Climate Action Plan 2024 - 2029 outlines the main climate risks facing Offaly and Laois County Council. The plans set out Strategic Goals to achieve the mission and vision of the plan.

Offaly County Council Strategic Goals:

1) Fostering Governance, Leadership and Partnerships for Climate Action;
2) Achieve our Carbon Emission and Energy Efficiency Targets for 2030 and 2050;
3) Deliver on Climate Adaption and Climate Resilience;
4) Mobilising Climate Action in Local Communities;
5) Mobilising Climate Action in Enterprise and Support Transition to an Inclusive, Net Zero and Circular Economy;
6) Achieve a 'Just Transition' particularly for Communities that may be economically disadvantaged by decarbonising projects.

Laois County Council Strategic Goals:

1) To improve our energy efficiency within Laois County Council, to reduce greenhouse gas emissions and to achieve a high standard of climate action in Laois County Council;
2) Mobilise the Community, Voluntary and Business sectors to deliver on climate action within their respective areas of influence;
3) Through our own actions in Laois County Council and through our partnerships with others in the Public Sector and with the Community, Voluntary and Business Sectors to provide leadership within the county (and further afield) on the matters related to climate change;
4) Through Active Travel, Environmental Awareness and other programmes, to enhance opportunities for individuals to choose the better, climate friendly options.
5) To make the county more resilient through a range of climate adaptation measures;
6) Recognising that climate change will not affect all in our community in equal manner and to apply the principles of ''Just Transition' in Laois County Council operations;
7) To recognise the opportunities which may arise through mitigation and adaption, whether these are potential business opportunities, or other quality of life improvements such as air quality.

8.2 Methodology

The methodology is to assess the impacts on air quality and climate involving the assessment of baseline air quality, a review of the project construction and operation practices to determine the likelihood and significance of any emissions, and a desktop assessment of all relevant guidance, best practice and legislation. Due to the non-industrial nature of the proposed development and the general character of the surrounding environment, air quality sampling was deemed to be unnecessary for this EIAR.

As part of this assessment, the local climate was characterised based on 30-year averages measured at a representative weather observatory. The compatibility of the proposed project with the 2024 national Climate Action Plan (CAP) was examined. Climate is a global rather than a national consideration, therefore current reports on the state of the climate have been summarised.

8.2.1 Desktop Study

The methodology used for this study included desk-based research of published information to assemble information on the local receiving environment. The desk study included reviewing the following activities:

- Existing EPA air quality monitoring data to characterize existing baseline air quality;
- Identification of sensitive receptors within the site and in close proximity to the area;
- Relevant assessment criteria, guidelines and best practice to assess the potential impact of the proposed development on air quality (at sensitive receptors) and climate;
- The construction methodology and its potential for dust generation;
- Review of Laois County Council (LCC) and Offaly County Council's (OCC) local and regional development plans and planning policy in order to identify future development and identify any planning allocations within the study area;
- Reviews of LCC & OCC's Planning Register to identify relevant development proposals currently under considerations by the Council;
- Review of EIARs and associated planning documents submitted for Dernacart Wind Farm (Fehily Timoney & Company, 2019)

8.2.2 Scope of Assessment

This assessment focuses on the potential impacts the proposed development will have on air quality and climate. It will also explore the potential cumulative effects of the proposed development in combination with other developments, which would be likely to result in significant air quality and climate impacts.

The potential effects of the decommissioning phase will be a lot less than the construction phase. The grid cable and substation will remain part of the national grid infrastructure and therefore decommissioning is not foreseen. Decommissioning is addressed in Chapter 2 of this EIAR. In the event decommissioning is required, the cables to the substation would be disconnected and remain in place and the overground substation infrastructure would be removed and the site restored to greenfield.

The assessment of impacts on local air quality for the current proposal involved a desk study to identify the main aspects of the proposed development that could generate emissions into the atmosphere and the key pollutants associated with these emissions.

8.2.3 Assessment Criteria

The method of impact assessment and prediction follows the EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR). The methodology and approach outlined in the EPA Guidelines was used to determine whether the proposed development had the potential to cause significant effects on the air and climate environment. The assessment methodology as per the EPA guidelines is outlined in Chapter 1 Introduction of this EIAR.

8.2.3.1 Air Quality

In the EU, directives set down Air Quality Standards to protect health, vegetation and ecosystems. The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) was published in May 2008 and was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). The current applicable legislation in Ireland is the Ambient Air Quality Standards 2022, which incorporates EU Directive 2008/50/EC limit values for pollutants.

To reduce the risk of poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limits are set for the protection of human health and ecosystems. Air Quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values which incorporate European Commission Directive 2008/50/EC which has set limit values for pollutants SO_2, NO_2, PM_{10}, Lead, Benzene and Carbon Monoxide. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC). Provisions are also made for the inclusion of ambient limit values relating to $PM_{2.5}$.

Table 8.1: Limit values of Directive 2008/50/EC, 1999/30/EC and 2000/69/EC (Source: EPA)

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m³)	Limit Value (ppb)	Basis of Application of Limit Value
Sulphur dioxide (SO_2)	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year
Sulphur dioxide (SO_2)	Protection of human health	24 hours	125	47	Not to be exceeded more than 3 times in a calendar year
Sulphur dioxide (SO_2)	Protection of vegetation	Calendar year	20	7.5	Annual mean
Sulphur dioxide (SO_2)	Protection of vegetation	1st Oct to 31st Mar	20	7.5	Winter mean
Nitrogen dioxide (NO_2)	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year
Nitrogen dioxide (NO_2)	Protection of human health	Calendar year	40	21	Annual mean
Nitrogen monoxide (NO) and nitrogen dioxide (NO_2)	Protection of ecosystems	Calendar year	30	16	Annual mean
Particulate matter 10 (PM_{10})	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year
Particulate matter 2.5 ($PM_{2.5}$)	Protection of human health	Calendar year	40	-	Annual mean
Particulate matter 2.5 ($PM_{2.5}$) Stage 1	Protection of human health	Calendar year	25	-	Annual mean
Particulate matter 2.5 ($PM_{2.5}$) Stage 2	Protection of human health	Calendar year	20	-	Annual mean
Lead (Pb)	Protection of human health	Calendar year	0.5	-	Annual mean
Carbon Monoxide (CO)	Protection of human health	8 hours	10,000	8,620	-

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m³)	Limit Value (ppb)	Basis of Application of Limit Value
Benzene (C_6H_6)	Protection of human health	Calendar Year	5	1.5	-

The Ozone Daughter Directive 2002/3/EC is different from the other Daughter Directives in that it sets target values and long-term objectives for ozone rather than limit values. Table 8.2 presents the limit and target values for ozone.

Table 8.2: Target values for Ozone Defined in Directive 2008/50/EC (Source: EPA)

Objective	Parameter	Target Value for 2010	Target Value for 2020
Protection of human health	Maximum daily 8-hour mean	120 mg/m³ not to be exceeded more than 25 days per calendar year averaged over 3 years	120 mg/m³
Protection of vegetation	AOT40 calculated from 1 hour values from May to July	18,000 mg/m³.h averaged over 5 years	6,000 mg/m³.h
Information Threshold	1-hour average	180 mg/m³	-
Alert Threshold	1-hour average	240 mg/m³	-

The potential for a significant impact to air quality may arise from emissions of fugitive dust during construction. Transport Infrastructure Ireland (TII) have issued updated guidance, December 2022, 'Air Quality Assessment of Proposed National Roads – Standard '. This has been consulted to determine the potential impacts from the proposed construction activities.

The EPA report 'Air Quality in Ireland Report 2022' notes that in Ireland, air quality is generally good, however, there are concerning localised issues that are impacting negatively on the air we breathe. Ireland met all its EU Legal requirements in 2022 but it did not meet the new health-based WHO guidelines in 2022. It is estimated that there are approximately 1,300 premature deaths annually in Ireland due to poor air quality from fine particulate matter ($PM_{2.5}$). Poor air quality has a proven negative impact on people's health. In 2022, air monitoring results from EPA stations across Ireland show that fine particulate matter ($PM_{2.5}$) mainly from burning solid fuels in our homes and nitrogen dioxide (NO^2) mainly from road traffic, remain the main threats to good air quality.

Dust

With regards to larger dust particles that can give rise to nuisance dust (soiling), there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. The impact of dust is usually monitored by measuring rates of dust deposition. The German TA Luft Air Quality Standards (TA Luft, 1986) are the only standards available that specify a method for measuring dust deposition – The Bergerhoff Method. The TA Luft dust deposition limits at site boundaries for total dust is 350mg/m^2/day averaged over a 30-day period. The extent of dust generation at any site depends on the type of activities undertaken, the location, the nature of the dust, i.e. soil, sand, peat etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the haul route.

Transport Infrastructure Ireland (TII) published new guidance in 2022 for assessing dust effects at a local level from road construction 'Air quality assessment of proposed national roads – Standard' (TII, 2022A) and 'Air quality assessment of specified infrastructure projects – overarching technical document' (TII,2022B). The assessment of dust has been carried out in accordance with same. The TII Guidance in relation to dust is in accordance with the latest 2024 IAQM Guidelines on construction dust assessments, Guidance on the assessment of dust from demolition and construction.

This assessment of dust effects therefore focuses on identifying the existing baseline levels of PM_{10} and $PM_{2.5}$ in the region of the proposed development by an assessment of EPA monitoring data. Thereafter, the effect of the construction phase of the proposed development on air quality was determined by a qualitative assessment of the nature and scale of dust generating construction activities with the proposed development based on the guidance issued by the IAQM (2024).

Traffic

TII guidance documents (TII, 2022A/2022B) state that the following scoping criteria shall be used to determine whether the air quality impacts of a project can be scoped out or require an assessment based on changes between 'Do-Something' traffic scenario (with the proposed development) compared to the 'Do-Minimum' traffic scenario (without the proposed development):

- Road alignment will change by 5m or more;
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more;
- Peak hour speed will change by 20kph or more.

If the above criteria are not met, then a detailed quantitative assessment of construction traffic is not required.

8.2.3.2 Climate

8.2.3.2.1 National Climate Policy

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted 9the Act). The purpose of the Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050' (3.(1) of No. 46 of 2015). This is referred to in the Act as the 'national transition objective'. The Act provided for the

establishment of the Climate Change Advisory Council (hereafter referred to as the 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 Advisory Council is to advise and make recommendations on the following:

- The preparation of a Climate Action Plan (CAP);
- The preparation of a national long-term climate action strategy;
- The preparation of a national adaption framework;
- The finalisation and revision of a carbon budget; and
- Compliance with any existing obligations of the State under EU law or any international agreements.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across the key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Bill 2021 (hereafter referred to as the 2021 Climate Bill) in March 2021. The Climate Act was signed into Law on the 23rd of July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act was to provide for the approval of plans 'for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050'. The 2021 Climate Act will also 'provide for carbon budgets and a sectoral emissions ceiling to apply to different sectors of the economy'. The 2021 Climate Act removes any reference to a national mitigation plan and instead refers to both the CAP, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Minister for the Environment, Climate and Communications is required to request that each local authority prepare a 'local authority climate action plan' lasting five years and specifying the mitigation measures and the adaptation measures to be adopted by the local authority. The 2021 Climate Act has set a target of a 51% reduction in the total amount of GHGs over the course of the first two carbon periods ending 31 December 2030 relative to 2018 annual emissions. The 2021 Climate Act defines the carbon budget as 'the total amount of GHG emissions that are permitted during the budget period'. The 2021 Climate Act outlined a series of specific actions including:

• To make a strategy to be known as the 'National Long Term Climate Strategy' not less than once in every five-year period with the first to be published for the period 2021 to 2035 and with each subsequent Strategy covering the next three five-year carbon budgets and also include a longer-term perspective of at least 30 years;

• To adopt a system of carbon budgets which will be determined as part of a grouping of three five-year periods calculated on an economy-wide basis, starting with the periods 2021 to 2025, 2026 to 2030, and 2031 to 2035 (See **Table 8.3**);

• To introduce a requirement for Government to adopt "sectoral emission ceilings" for each relevant sector within the limits of each carbon budget;

• To request all local authorities to prepare CAPs for the purpose of contributing to the national climate objective. These plans should contain mitigation and adaptation measures that the local authority intends to adopt;

• Increasing the power of the Advisory Council to recommend the appropriate climate budget and policies;

• Requiring the Minister to set out a roadmap of actions to include sector specific actions that are required to comply with the carbon budget and sectoral emissions ceiling for the period to which the plan relates; and

• Reporting progress with the CAP on an annual basis with progress including policies, mitigation measures and adaptation measures that have been adopted.

In relation to carbon budgets, the Climate Action and Low Carbon Development (Amendment) Act (Government of Ireland, 2021b) 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 8.3. 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 (the Minister for the Environment) shall prepare and submit to government the maximum amount of 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 8.4.

Table 8.3: Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035(Department of the Environment, Climate and Communications 2022)

Sector	Reduction Required	2018 Emissions ($MtCO_{2e}$)[Note 1]
2021 – 2025	295 $MtCO_2eq$	Reduction in emissions of 4.8% per annum for the first budget period.
2026 – 2030	200 $MtCO_2eq$	Reduction in emissions of 8.3% per annum for the second budget period.
2031 – 2035	151 $MtCO_2eq$	Reduction in emissions of 3.5% per annum for the third provisional budget.

[Note 1]: MtCO2eq demotes million tonnes carbon dioxide equivalent.

Table 8.4: Sectoral Emissions Ceiling 2030 (Department of the Environment, Climate and Communications 2022)

Sector	Reduction Required	2018 Emissions ($MtCO_2eq$)	2030 Emission Ceiling ($MtCO_2eq$)
Electricity	75%	10.5	3
Transport	50%	12	6
Buildings (Commercial and Public)	45%	2	1
Buildings (Residential)	40%	7	4

Industry	35%	7	4
Agriculture	25%	23	17.25
Other**	50%	2	1

**F-gases, Waste and Petroleum refining

In December 2022, CAP23 was published (Government of Ireland, 2022). This is the first CAP since the publication of the carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030. The CAP has six vital high impact sectors where the biggest savings can be made: renewable energy, 10-5 energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use.

8.2.3.2.2 EU Climate Policy

Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which entered into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C.

In 2023, the first ''global stocktake'' will assess progress on Paris Agreement goals and chart a way forward. This process was concluded at COP28 in Dubai in December 2023. The global stocktake was considered the central outcome of COP28 and can now be used to develop stronger climate action plans due by 2025.

The stocktake recognised the science that indicates that global greenhouse gas emissions need to be cut by 43% by 2030, compared to 2019 levels, to limit global warming to 1.5°C and notes parties are off track to meet their Paris Agreement goals.

The stocktake calls on Parties to take actions towards achieving, at a global scale, a tripling of renewable energy capacity and doubling energy efficiency improvements by 2030. The list also includes accelerating efforts towards the phase-down of unabated coal power, phasing out inefficient fossil fuel subsidies, and other measures that drive the transition away from fossil fuel in energy systems, in a just, orderly and equitable manner, with developed countries continuing to take the lead.

In the short-term, Parties are encouraged to come forward with ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors and categories and aligned with the 1.5°C limit in their next round of climate action plans (NDCs) by 2025.

With a view towards strengthening the country's resolve towards meeting its targets, the Irish Government published the Climate Action Plan 2023 the second update to Ireland's Climate Action Plan 2019. To meet the level of emissions reduction required by the carbon budget programme and sectoral ceilings for electricity, we will:

- Limit CO2eq. emissions over the first two budget periods in line with the sectoral emissions ceilings to 60 MtCO2eq. (40 MtCO2eq. for 2021-2025 and 20 MtCO2eq. for 2026-2030);
- Reduce annual CO2eq. emissions from the sector to 3 MtCO2eq. by 2030 (75% reduction compared to 2018).

Achieving further emissions reductions between now and 2030 requires a major step up across three key measures:

- Accelerate and increase the deployment of renewable energy to replace fossil fuels;
- Deliver a flexible system to support renewables and demand;
- Manage electricity demand.

Accelerate Renewable Electricity Generation

- Accelerate the delivery of onshore wind, offshore wind, and solar through a competitive framework to reach 80% of electricity demand from renewable energy by 2030;
- Target 6 GW of onshore wind and up to 5GW of solar by 2025;
- Target 9 GW onshore wind, 8 GW solar, and at least 5 GW of offshore wind by 2030 (and an additional 2 GW offshore wind for green hydrogen production);
- Complete a revised version of Shaping our Electricity Future to define the required new construction and reinforcement of the electricity transmission and distribution system across the country required to achieve sectoral ceilings and carbon budgets;
- Having regard to the interaction between the planning and grid consenting systems and the overall timeframes for permitting, deliver a streamlined electricity generation grid connection policy and process and remove barriers for installation of renewables and flexible technologies without the need to build new grid, including hybrid (wind/solar/storage) connections and private wires;
- Align the relevant constituent elements of the planning and permitting system to support accelerated renewable energy development, supported by national policy and associated methodologies to inform regional and local planning policies, noting that Development Plans are obliged to set out objectives to facilitate energy infrastructure;
- In line with the emerging EU frameworks, ensure that renewable energy generation projects, and associated infrastructure, will be considered to be in the overriding public interest;
- All relevant public bodies to carry out their functions to support the achievement of the 80% renewable electricity target;
- Support at least 500 MW of local community-based renewable energy projects and increased levels of new micro-generation and small-scale generation.

The European Green Deal is an ambitious plan to transform Europe into the first climate-neutral continent. The European Green Deal is a comprehensive package of policy initiatives aimed at achieving climate neutrality across the EU by 2050. The EU is committed to reducing its net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. The Commission's 'Fit for 55' package of legislation was created to achieve this across all sectors of the EU Economy. The REPower EU plan builds on 'Fit for 55' to speed up the roll-out of renewables to replace fossil fuels and reduce Europe's dependency on energy imports as quickly as possible. The Commission is recommending setting a target of reducing emissions by 90% for 2040.

8.2.4 Modeling Methodology

This assessment has been undertaken with reference to the most applicable guidance documents relating to air quality which are set out in the following sections of this Chapter.

An overview of the methodology undertaken for the air quality impact assessment is outlined below:

- A baseline air monitoring study has been undertaken in order to characterise the existing ambient environment in areas along the proposed scheme. This has been undertaken through a review of available published ambient air monitoring data from locations in proximity to the proposed development;
- A review of the most applicable standards and guidelines has been reviewed in order to define the air quality significance criteria for the Construction and Operational Phases of the Proposed Scheme;
- Predictive calculations and impact assessments relating to the likely Construction Phase air quality impacts have been undertaken at the nearest sensitive locations to the construction work area associated with the Proposed Scheme;
- Predictive calculations have been performed to assess the potential air quality impacts associated with traffic alterations associated with the operation of the Proposed Scheme at the most sensitive locations; and
- A schedule of mitigation measures has been incorporated where required, to reduce, where necessary, the identified potential air quality impacts associated with the Proposed Scheme.

8.2.5 Statement on Limitations and Difficulties Encountered

It is not possible to quantify exactly what effect the proposed development will have on Climate Change and Air Quality beyond the site boundary. However, it has been possible to determine the potential significance of the effects. It is universally accepted that replacing fossil fuel generated electricity with wind generation and other forms of renewable electricity has a positive rather than adverse effect nationally and globally on air quality and climate. The information provided in this chapter is considered appropriate to enable an informed decision to be made on the potential effects of the proposed development on air quality and climate.

8.3 Baseline Environment

Statkraft Ireland are seeking planning permission for the development of a 110kV substation for the permitted Dernacart Wind Farm (ABP Ref: 310312 and Laois Co. Co. 2078) with associated compound, 2.45km underground cable (UGC) between the wind farm site and the proposed substation, 10.85km of 110kV underground cabling to the consented Bracklone 110kV substation. A full project description is included in Chapter 2 of this report. The development substation is located approximately 7km west of Portarlington and approximately 2.5km north east of Mountmellick. The substation, associated infrastructure and commencement of grid is located in the townland of Barranaghs, Co. Offaly and terminates in the townland of Bracklone, Co. Laois.

The affected lands are made up of scrubland and agricultural fields bounded by hedgerows and treelines with existing access tracks bounding the substation site on the east and west. The wind farm collector cable will be installed from the wind farm to the substation through commercial forestry plantation, scrub and peatland. The grid connection from the substation to Bracklone will be installed within the public road network passing through the townlands of Barranaghs, Garryhinch, Annamore in County Offaly and Coolnavaroga, Coolaghy, Kilbride, Ballymorris, Cooltederry and Bracklone, Co. Laois. The environment consists of ribbon development and dispersed detached housing into the more urban setting of Portarlington town. The landscape along the rural sections of the route primarily consists of patchwork farmland, with fields enclose by hedgerows, along with boglands and conifer plantations.

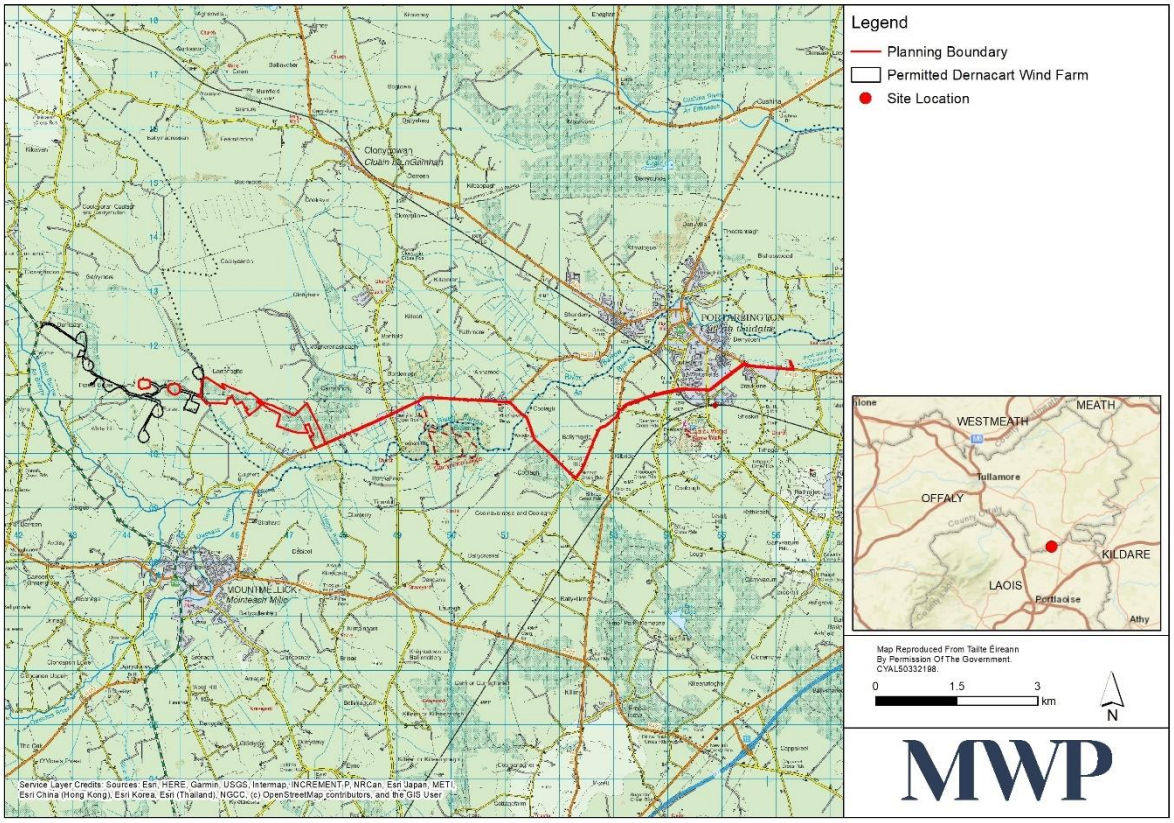

Figure 8.1: Location of Proposed Development

Representative Environmental Protection Agency (EPA) ambient air quality data has been used to characterise the existing air quality in the area. The sensitive receptors include houses and ecologically sensitive areas. The classification of sensitive receptors is detailed in section 8.3.6.

The predominant construction activity will take place at the location of the substation. This will be located at Barranaghs, Co. Offaly. The nearest highly sensitive receptor (residential) in this case is located approximately 220m west of the proposed works.

The closest vulnerable receptors are the households living along the grid cable route.There are greater than 100 sensitive receptors living adjacent to the proposed grid route. The entire grid cable is to be installed within the carriageway of the public road network. The landscape along the route primarily consists of peatland and agricultural lands, with fields enclosed by hedgerows, along with conifer plantations. The River Barrow and River Nore SAC (002162) runs adjacent to sections of the grid connection route.

The two closest towns from the proposed development site are Mountmellick, approximately 3.5km southeast and Portarlington approximately 7.1km northeast of the development site.

8.3.1 EPA Air Quality Zones

The Environmental Protection Agency (EPA) has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and environs;
- Zone B: Cork City and environs;

- Zone C: 16 urban areas with population greater than 15,000;
- Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Framework Directive and Daughter Directives. The site of the proposed development lies within Zone D, which represents rural areas located away from large population centres

8.3.2 Baseline Air Quality

The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones in Ireland. The development site is located in Zone D. There is an EPA station within 7.5km (south) of the proposed development site. The station is situated at Emo. Co. Laois (Station 62 – Zone D). It records parameters NO_2 and Ozone (O_3). There is an ambient air monitor at Portlaoise (Station 16 – Zone C). The station is 12km south of the proposed developed and it monitors for parameters NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$.

Long term trends in $PM_{2.5}$ are reported in the EPA Air Quality Report 2022 for Zone D. Between 2010 and 2022 annual average $PM_{2.5}$ trends have peaked at 16µg/m^3 in 2013 to a trough (low) of 8.4 µg/m^3 in 2022.

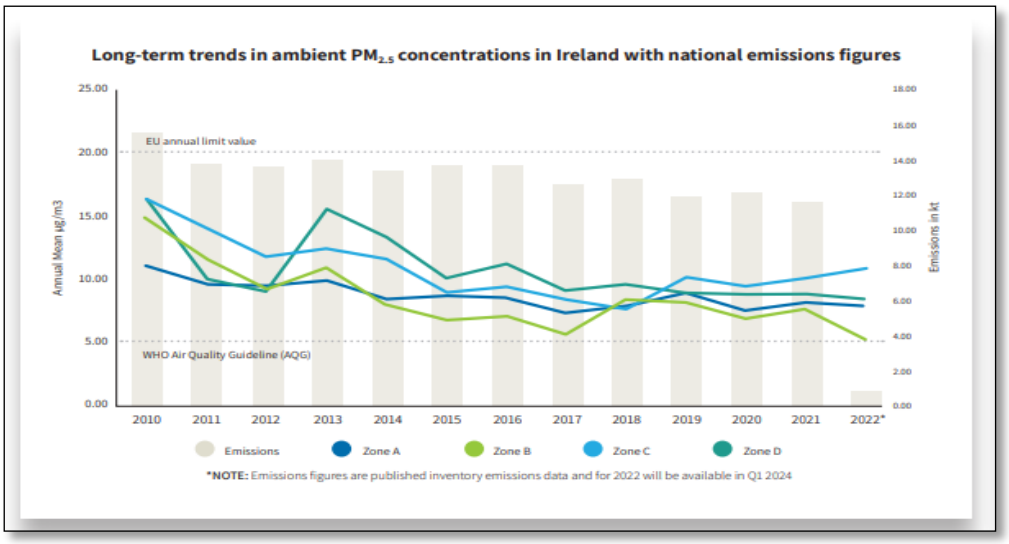

Figure 8.2: Long Term trends in ambient $PM_{2.5}$ Air Quality Zones

Since 2014, the EPA have being producing annual reports to provide an overview of air quality in Ireland based on the data obtained from the 29 monitoring stations that form the National Ambient Air Quality Network. Data taken throughout the year is validated and a summary report produced the following year. The most recent report available, produced in 2023 for data collected during 2022, also includes summary tables for all stations throughout Ireland. Transport Infrastructure Ireland (TII) produced an updated standard in December 2022 titled 'Air Quality Assessment of Proposed National Roads – Standard' the purpose of which was to assess the potential air quality impacts of national road schemes. The guidance states that the main concern in relation to emissions from road traffic are nitrogen dioxide (NO_2) and particulate matter in the fractions of equal to or less than 10µm (PM_{10}) and equal to or less than 2.5µm ($PM_{2.5}$). During the construction phase, potential air quality effects can occur due to dust emissions and from construction traffic movements. Construction traffic movements include additional vehicle trips associated with the construction of the scheme, as well as traffic management measures. Construction phase impacts will be temporary or short-term in nature.

EPA validated air monitoring data for 2022 was collated to reflect ambient air quality data at the proposed development site. The average $PM_{2.5}$ concentration for all stations located in Zone D was 8.35µg.m^3 in 2022. The nearest monitoring station to the proposed development which collects $PM_{2.5}$ data is Portlaoise and the annual average mean result for this location was 8.1µg.m^3. Both average levels recorded are well below the 20µg.m^3 air quality standard limit in the Ambient Air Quality Standards Regulations 2022 which incorporate limits (EU Directive 2008/50/EC).

PM_{10} data results from Zone D for 2022 was an average of 13.8µg.m^3 and for Portlaoise located in Zone C was 12.7 µg.m^3. Both average levels recorded are well below the 40µg.m^3 air quality standard limit. The applicable standards in Ireland include the Ambient Air Quality Standards Regulations 2022.

NO_2 is monitored at EMO station and the annual mean for the period 2022 was 3.3 µg.m^3, well below the AQS limit of 40 µg.m^3 mean per calendar year.

8.3.3 Local Climate

Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers. There are a total of 20 automatic weather stations (AWS) and 5 manned weather stations (MWS) in Ireland. All weather observations record day-to-day changes of the atmosphere and are quality controlled in Met Eireann's database to formulate long-term climate records. The nearest station to the proposed development site is Mullingar AWS. The following parameters are recorded at the station: Air temperature, rainfall and wind speed.

Mullingar, Co. Westmeath, is the nearest weather and climate monitoring station to the proposed development Meteorological data recorded for the 13-year period from 2011 – 2023 is detailed in **Table 8.5**. The monitoring station is located approximately 40km north of the site.

The wettest months are October and December and May is usually the driest. July is the warmest month with a mean daily temperature of 15.3° Celsius.

The Annual Climate Statement for 2022 released by Met Éireann[1] states that 2022 was the warmest year on record with below average rainfall and all mean air temperatures across the country were above their annual Long-Term Average (LTA).

Table 8.5: Met Data Mullingar AWS 2011 – 2023.

Mullingar AWS													
Rain (mm)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average Annual
2011	47.1	119	36.1	35	67.3	65.1	60.3	65.1	122.1	133	106.2	87.8	78.7
2012	97.4	42.4	15.4	75.4	55.1	175.1	122.1	128.9	62	90.9	68.3	91.2	85.4
2013	117.8	54.8	40.1	78.1	72.2	62.6	62.8	52.8	53.8	179.3	46.6	142.5	80.3
2014	147.1	154.9	72.3	55.4	128.6	63.4	31.6	153.8	16.1	125.2	154.4	100.7	100.3
2015	92.9	53.7	92.8	64.2	135.3	37.1	76.5	97.1	39.2	57.6	184.4	274.3	100.4
2016	121.9	111.8	58.2	91.2	61.6	130.3	70.1	98.6	90.5	33.9	50.7	69.5	82.4
2017	41.4	75.2	83.7	14.1	70.7	98.1	90.5	77.4	113.1	104.4	78.2	106.1	79.4
2018	148.1	52.4	73.6	58.9	33.9	27.1	33.5	60.2	45.8	41.7	105.8	100.6	65.1

[1] https://www.met.ie/annual-climate-statement-for-2022

2019	41.3	48.8	157.1	58.6	43.2	79.6	78.1	151.9	131.7	90.8	126.7	82.8	90.9
2020	54.4	197.5	61	41.9	10.1	96.6	126.3	114	68.3	131.8	87.7	89.3	89.9
2021	126.9	80.3	80.9	25.5	107.4	17.4	74.9	142.1	58.1	97.7	41.6	128	81.7
2022	47.6	131.8	46.2	48.7	53.4	100.6	31.6	35.2	104.1	208.8	109.3	84.5	83.5
2023	81.1	29.8	141.4	82.8	36.4	53.3	178.8	114.3	132.9	104.5	71.2	132	96.5
Average Monthly	89.6	88.6	73.8	56.1	67.3	77.4	79.8	99.3	79.8	107.7	94.7	114.6	

Mean Air temp (°C)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Average Annual**
2011	2.9	6.3	6	10.5	10.6	11.6	14.1	13.1	13.3	11	8.9	5.1	9.5
2012	5.8	6.6	7.9	6.7	10.5	13	14	15.4	11.8	8	5.5	4.7	9.2
2013	4.5	4.1	3.1	6.6	9.9	13.3	17.3	15.1	13.1	11.3	5.8	6.1	9.2
2014	4.6	5.1	6.5	9.4	11.3	14.1	15.8	13.4	13.6	10.2	6.9	4.8	9.6
2015	4.1	4.1	5.4	7.7	9.5	12.7	13.4	13.4	11.6	9.8	7.9	7.4	8.9
2016	4.9	4.1	5.7	6.6	11.6	14.4	15.1	14.9	13.5	10.1	5.1	5.7	9.3
2017	5.4	5.5	7.5	8.2	11.7	13.9	14.7	13.8	12	10.7	6	4.9	9.5
2018	4.7	3.1	4.1	8.2	11.8	15.6	16.2	14.7	11.6	9	7.2	7.3	9.5
2019	5.1	7	6.7	8.7	10.6	12.5	16.1	15	12.6	8.9	5.9	5.4	9.5
2020	5.5	5.2	6.1	9.5	11.7	13.6	14.1	14.9	12.7	9.4	7.6	4.5	9.6
2021	3.3	5.6	7.4	7	9.3	13.8	17.1	14.9	14.5	11.4	7.8	6.3	9.9
2022	5.1	6.2	6.6	8.1	12	13.5	16.2	15.5	12.9	11.3	8.2	3.4	9.9
2023	5.3	6.8	6.9	8.7	12.3	15.9	14.5	15.3	14.3	10.8	6.8	6.5	10.3
Average Monthly	4.7	5.4	6.1	8.1	11.0	13.7	15.3	14.6	12.9	10.1	6.9	5.5	

Mean Wind Speed (knots)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Average Annual**
2011	4.7	6.8	4.6	5.8	8.8	5.3	4.7	4.6	7.8	7.6	7.9	8.1	6.4
2012	7.7	6.4	5.9	6.3	5.7	5.7	5.1	6.4	5.8	5.1	6.1	6.4	6.1
2013	6.6	6	7.2	7.7	6.9	5.4	4.6	5.3	5.4	5.9	5	8.9	6.2
2014	7.3	9.3	6.6	6.3	5.6	4.6	4.9	5.7	3.9	6.5	5.2	6.8	6.1
2015	8	6.1	7.1	5.5	7.2	6.1	6.1	5.4	5	5.2	7.5	9.3	6.5
2016	7.5	7.1	6.1	6.3	5.8	4.6	5.2	5.8	6.4	5.2	4.8	5.8	5.9
2017	6	7.8	7	5.4	6.1	6.1	5.2	5.2	5.8	6.7	5.2	6	6.0
2018	7.7	6.5	7	7	5.7	4.8	4.6	5.1	5.5	5.8	7.4	6.9	6.2
2019	5.2	8.2	7	6.8	4.9	5.7	5.3	6.1	5.4	5.6	5.3	7.1	6.1
2020	7.2	9.3	7.2	6	6	5.9	5.7	5.5	5.7	6.8	6.8	6.6	6.6
2021	5.4	8.6	6.8	5.3	6	5.5	4.1	4.7	4.7	6.1	5.5	6.6	5.8
2022	5.6	8.7	6	6.4	6.3	5.9	4.9	4.6	4.8	7	7.5	5.5	6.1
2023	6.5	6.4	6.7	6.5	5	5.7	5.8	5.9	5.6	5.2	5.6	7.9	6.1
Average Monthly	6.6	7.5	6.6	6.3	6.2	5.5	5.1	5.4	5.5	6.1	6.1	7.1	

Wind direction at Mullingar, which would be representative of the Midlands, is largely from a south-westerly direction. Thirty years of data from 1988 – 2018 was compiled in order to evaluate wind direction and wind speed over a significant period of time. [2]

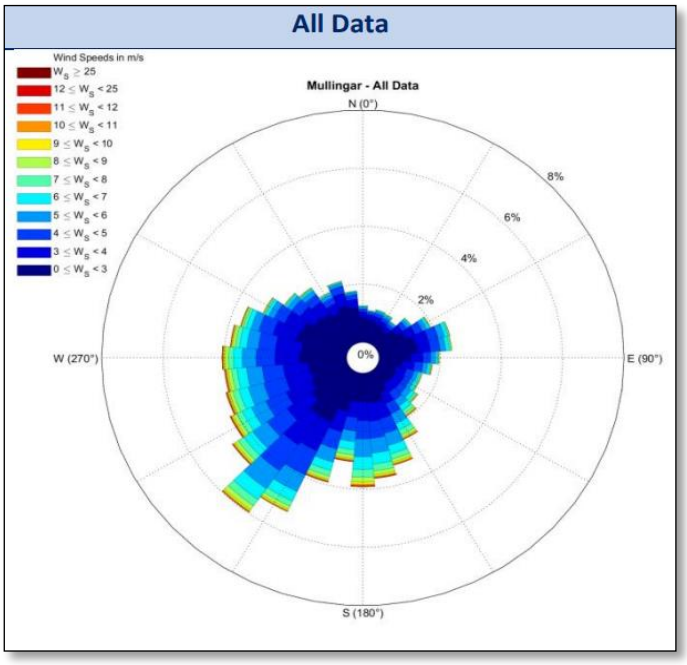

Figure 8.3: Mullingar Wind Speeds and Direction 1988 - 2018

8.3.4 Global Climate

Every year, the World Meteorological Organisation (WMO) issues a 'Statement on the State of the Global Climate'. It is based on data provided by National Meteorological and Hydrological Servies and other national and international organisations. Some of the key messages in the WMO 'Provisional Statement of the State of the Climate 2023'[3] are as follows:

- The past nine years, 2015-2023, will be the nine warmest years on record.
- Record monthly global temperatures have been observed for the ocean – from April through to September – and, starting slightly later, the land – from July through to September.
- Observed concentrations of the three main greenhouse gases – carbon dioxide, methane and nitrous oxide – reached record high levels in 2022, the latest year for which consolidated global values are available (1984-2022). Real time data from specific locations show that levels of the three greenhouse gases continued to increase in 2023.
- The ten-year average 2014-2023 (to October) global temperature is 1.19 ± 0.12°C above the 1850-1900 average, the warmest 10-year period on record.

[2] RPS, Draft Wind Energy Guidelines Wind Turbine Noise Analysis, Nov 2018

[3] https://wmo.int/sites/default/files/2023-11/WMO%20Provisional%20State%20of%20the%20Global%20Climate%202023.pdf

- In 2023, global mean sea level reached a record high in the satellite record (1993 to present), reflecting continued ocean warming as well as the melting of glaciers and ice sheets. The rate of global mean sea level in rise in the past ten years (2013-2022) is more than twice the rate of sea level rise I the first decade of the satellite record (1993-2002).
- Extreme weather continues to lead to severe socio-economic impacts. Extreme heat affected many parts of the world. Wildfires in Hawaii, Canada and Europe led to the loss of life, the destruction of homes and large scale air pollution. Flooding associated with extreme rainfall from Mediterranean Cyclone Daniel affected Greece, Bulgaria, Turkey and Libya with particularly heavy loss of life in Libya.
- Food security, population displacements and impacts on vulnerable populations continue to be of concern in 2023, with weather and climate hazards exacerbating the situation in many parts of the world.
- Extreme weather and climate conditions continued to trigger new, prolonged and secondary displacement in 2023 and increased vulnerability of many who were already uprooted by complex multi-casual situations of conflict and violence.

8.3.5 Greenhouse Gas Emissions

In June 2023, the EPA updated the 1990-2022 greenhouse gas emissions inventory data. In 2022, Ireland's GHG emissions are estimated to be 60.76 million tonnes carbon dioxide equivalent (Mt CO_2eq) which is 1.9% lower than emissions in 2021, driven by higher fuel process, increased renewable energy, behavioural change and regulation[4]. Power generation emissions decreased by 1.9% due to a reduction in coal, oil and peat use and more renewable energy. In total, 60.76 Mt CO2 eq were emitted excluding emissions from Land Use, Land Use Change and Forestry (LULUCF). The report highlights that 47% of Ireland's Carbon Budget for 2021-2025 has been used in the first 2 years. An extremely challenging annual reduction of 12.4% is required for each of the remaining years if Ireland is to stay within the Budget.

8.3.6 Sensitive Receptors

A receptor is a location that may be affected by dust emissions during demolition and construction. Human receptors include locations where people spend time and where property may be impacted by dust. Ecological receptors are habitats that might be sensitive to dust. The Institute of Air Quality Management (IAQM) have recently updated guidance for the assessment of dust from demolition and construction. Transport Infrastructure Ireland (TII) has published guidance for 'Air Quality Assessment of Proposed National Roads' (PE-ENV-01107). This standard refers to the IAQM procedures.

The objectives of the AQA process are to:

- Determine baseline air quality within the study area.
- Identify human receptors where a potential significant change in NO_2, PM_{10} or $PM_{2.5}$ concentrations, due to the proposed national road scheme, may occur.
- Identify sensitive designated habitats where a potential significant change in NOx or ammonia concentrations, due to the proposed national road scheme, may occur.
- Identify human and sensitive designated habitats where there is risk of dust and traffic movement effects occurring during the construction phase.

[4] https://www.epa.ie/news-releases/news-releases-2023/irelands-2022-greenhouse-gas-emissions-show-a-welcome-decrease-but-much-work-remains-to-be-done.php#:~:text=Ireland%27s%20greenhouse%20gas%20emissions%20decreased,use%20and%20more%20renewable%20energy.

- Determine suitable mitigation measures to reduce significant air quality effects to an acceptable level.

A key principle of the air quality assessment process is to be proportional to the nature and scale of the project as it relates to the potential for significant air quality effects.

Step 1: Screen the need for a detailed assessment: An assessment will be required where there are sensitive receptors located within 200m of the boundary of the site or route used by construction vehicles on the public highway. Sensitive receptors can be classed as human and ecological.

Each receptor and/or environmental resource which may be impacted by the Proposed Development is identified and assigned a value on the basis of its importance or sensitivity to the potential impacts. The terminology used to describe the sensitivity of the receptor is High, Medium or Low. The following table indicates how sensitive receptors would be defined for the purposes of this report:

Table 8.6: Classification Sensitive Receptors

Classification	Human	Ecological
High Sensitivity Receptor	Locations where members of the public are exposed over a period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include residential properties. Hospitals, schools, and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	Locations with an international or national designation and the designated features may be affected by dust soiling or locations where there is a community of a particularly dust sensitive species. Indicative examples include a Special Area of Conservation (SAC) that is dust sensitive.
Medium Sensitivity Receptor	Locations where the people exposed are workers, and exposure is over a period relevant to the air quality objectives, at relevant locations would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work Legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition. Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features
Low Sensitivity Receptor	Locations where human exposure is transient. Indicative examples include public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features mya be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features

The land uses adjacent to the proposed substation are agricultural, forestry and residential. Along the proposed grid route uses include forestry, road transport, residential, commercial and agricultural. The scale of the works can be divided into 3 stages:

- The substation site area is approximately 2.07ha.
- The wind farm collector cable has a development footprint of 1.5ha.
- The grid connection to Bracklone substation has a length of 10.85km.

The substation location is surrounded by agricultural fields and there are no sensitive receptors within 200m of the site boundary. There are no sensitive receptors within 200m along the collector cable route, the route travels along forestry tracks and through areas of scrub, bracken and conifer. The grid connection passes through a number of townlands before connection to Bracklone 110kV substation at the east of Portarlington and would therefore be in proximity to a number of different sensitivity receptors including residential and ecological. The UGC works would be installed in the public road subject to a Road Opening License (ROL) prior to commencement. Horizontal Directional Drilling (HDD) will be utilised at water crossings 8, 9, 10 and 11 (Chapter 2) where the water bodies are connected to the River Barrow and River Nore SAC (002162).

Figure 8.4: River Barrow and River Nore SAC (002162) in relation to the proposed route.

Step 2: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based on two factors:

- The scale and nature of the works (Step 2A), which determines the potential dust emission magnitude as small, medium or large and;
- The sensitivity of the area to dust impacts (Step 2B) which is defined as low, medium or high sensitivity.

These two factors are combined to determine the risk of dust impacts with no mitigation applied.

Step 2A: The scheme being assessed is the construction of a substation, grid collector cable and grid connection. The area is raised bog, forestry and farmland. As such there is no demolition phase involved therefore the risk of potential dust impacts occurring has been determined separately for earthworks, construction and trackout.

Step 2B: Define the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration and;

- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table 8.7: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)[C]			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

* There are between 1-10 receptors less than 250 from the substation site, none within the cable collection route and between 1-10 at any one time less than 20m from the UGC route

Table 8.8: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} concentration	Number of Receptors	Distance from Source (m)[C]			
			<20	<50	<100	<250
High	>32µg/m³	>100	High	High	High	Medium
		10 - 100	High	High	Medium	Low
		1 - 10	High	Medium	Low	Low
	28 - 32µg/m³	>100	High	High	Medium	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low
	24 - 28µg/m³	>100	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	<24µg/m³	>100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	>32µg/m³	>10	High	Medium	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} concentration	Number of Receptors	Distance from Source (m)[C]			
			<20	<50	<100	<250
		1 - 10	Medium	Low	Low	Low
	28 - 32µg/m³	>10	Medium	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	24 - 28µg/m³	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	<24µg/m³	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

* Average air quality is 13.25 µg/m³. There are between 1-10 receptors less than 250m from the substation, none in proximity to the cable collector and between 1-10 less than 20m from the UGC route.

Table 8.9: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from Source (m)[C]	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

* The UGC route passes in close proximity to the River Barrow and River Nore SAC. Installation of the cable at this section will utilize Horizontal Directional Drilling (HDD). HDD produces less particulate and GHG emissions than open trenching.

Table 8.10: Sensitivity of the Area - Outcome

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	-	Medium	Medium	Medium
Human Health	-	Low	Low	Low
Ecological	-	High	High	High

8.4 Assessment of Impacts and Effects

8.4.1 Construction Phase

During the construction phase there will be emissions from vehicle exhausts. The movement of machinery, construction vehicles and the use of generators during the construction phase will generate exhaust fumes containing predominantly carbon dioxide (CO_2), sulphur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM_{10}).

There will be dust generated from moving and transporting soil and materials in and around the construction site and on public roads. Weather conditions will play an important role in the quantity of dust generated. The potential for fugitive dust emissions is greatest during periods of prolonged dry weather.

There will be approximately 2.8ha of trees felled during the construction phase of the proposed development. The felled trees will be replanted elsewhere at an approved site. This will ensure no net loss of carbon sequestering trees. Any machinery used in the harvesting and replanting of the trees will have a negligible impact on local air quality. The potential impact of the tree felling and replanting on air quality and climate has been scoped out.

8.4.1.1 Dust and Air Quality

The main air quality impacts that may arise during the construction phase will be:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM_{10} and $PM_{2.5}$ concentrations, as a result of dust generating activities on-site;
- To a lesser extent, increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment used on-site.

The most common impacts are dust soiling and increased ambient PM_{10} concentrations due to dust arising from activities on the site. Dust soiling will arise from the deposition of the Particulate Matter (PM) in all size fractions but would be associated mostly with particulate matter greater than 10 µm. The ambient PM relevant to health outcomes would be that measured as PM_{10}, although most of this will be in the $PM_{2.5}$ fraction, rather than the $PM_{2.5}$ portion. In general, 85% to 90% by weight of the fugitive dust emissions of PM_{10} from construction sites are $PM_{2.5-10}$ and 10% to 15% are in the $PM_{2.5}$ fraction[5].

Step 2A:

8.4.1.1.1 Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling the site and landscaping. Example definitions for earthworks are:

- Large: Total site area > 110,000m^2, potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds > 6m in height.
- Medium: Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3-6m in height.

[5] https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

- **Small:** Total site area <18,000m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.

8.4.1.1.2 Construction

Dust emission magnitudes from the construction of buildings can be classified as small, medium and large and are described as follows:

- **Large:** Total building volume >75,000m^3, on-site concrete batching, sandblasting.
- **Medium:** Total building volume 12,000m^3-75,000m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching; and
- **Small:** Total building volume <12,0000m^3, construction material with low likelihood of dust release (e.g. metal cladding or timber).

8.4.1.1.3 Trackout

Trackout refers to the movement of dust and dirt from a construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. The factors which determine the magnitude of dust emissions are vehicle size, vehicle speed, vehicle numbers, geology and duration. Dust emission magnitudes from trackout can be classified as small, medium or large and have been described as follows:

- **Large:** >50 HGV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- **Medium:** 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m; and
- **Small:** <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

The potential dust emission magnitude was determined for each of the activities is shown in **Table 8.11**.

Table 8.11: Potential dust emission magnitude

Activity	Potential Dust Effect Magnitude	Justification
Earthworks	Medium/Small	Total site area between 18,000m^2 – 110,000m^2. Moderately dusty soil type. The earthworks for the UGC will be small in scale
Construction	Small	Total building volume c. 3,600m^{3for} substation. UGC phase classified as small. Laying of cable in sections and infill.
Trackout	Large/Small	Peak Daily 183 HDV movements at Substation and WF Collector Cable. 15 HDV movements at Grid Connection.

Step 2B: Define the Sensitivity of the Area

The sensitivity of the area to dust soiling, health impacts and ecological impacts is assessed in accordance with the methodology detailed in Section 8.3.6.

Table 8.12: Sensitivity of the Area - Outcome

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	-	Medium	Medium	Medium
Human Health	-	Low	Low	Low
Ecological	-	High	High	High

Step 2C: Define the Risk of Impacts

The dust emission magnitude determined at Step 2A should be combined with the sensitivity of the area determined in Step 2B to determine the risk of impacts with no mitigation applied. For those cases where the risk category is 'negligible' no mitigation measures beyond those required by legislation will be required. Levels of risk determined should determine the level of mitigation that must be applied.

Table 8.13: Risk of Dust Impacts - Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
*Substation and collector phase medium risk due to project scale. UGC low risk due to project scale			

Table 8.14: Risk of Dust Impacts - Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 8.15: Risk of Dust Impacts - Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
*The substation and collector cable are classed as large scale due to HDV movements. The UGC route is small in scale with <20 HDV movements peak daily.			

In the absence of mitigation, dust effects are predicted to be negative, not significant, short-term, localised and direct on sensitive receptors. Table 8.16 show the significance of construction phase dust effects in relation to dust soiling, human health and ecological receptors.

Table 8.16: Summary of Dust Risk to Define Site-Specific Mitigation

Potential Impact	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Low	Medium
Human Health	Low	Low	Low
Ecological	Low	Low	Low

Effect Rating

Table 8.16 shows the risk of the various stages of the development in relation to dust soiling, human health and ecological receptors. Overall, in the absence of mitigation, dust effects from the proposed development construction phase works are predicted to be negative, not significant to slight and temporary to short-term on dust sensitive receptors.

Table 8.17: Dust and Air Quality Impacts on Sensitive Receptors (with no mitigation)

Impact	Quality of Effect	Significance	Spatial Effect	Duration
Dust Soiling	Negative	Not Significant to Slight	Local	Temporary to short-term
Human Health	Negative	Not Significant to Slight	Local	Temporary to short-term
Ecological	Negative	Not Significant to Slight	Local	Temporary to short-term

8.4.1.2 Traffic/Vehicle Emissions

Assessment of construction phase traffic impacts will be required, where construction activities are programmed to last for a duration of six months or more. Six months is proposed as over this period a change in concentration can affect the annual concentration, which is the period that air quality standards have been set for[6]. It is anticipated that this project will take 16 months for the construction period with commencement in 2025. The traffic movements during the construction phase are outlined in the Material Assets (Traffic and Transport) Chapter 12. Over the course of the construction of the proposed development, activities across the site will vary resulting in different staff numbers and different trip generation depending on the activities being undertaken at any given time. Given the phasing of construction across the site, the peak construction period will occur when different activities are being undertaken in different phases.

Based on this, it is possible to estimate the peak traffic movements to the site based on the stage of development where multiple phases are underway.

The peak construction stage traffic has been reviewed and screened based on the following assessment criteria:

- Road alignment will change by 5m or more;
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more;
- Peak hour speed will change by 20kph or more.

The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII REM assessment criteria. Exhaust emissions from construction and delivery vehicles during the construction period of 16 months therefore are unlikely to have a negative effect on local air quality and will not have a significant effect on local, regional or national Air Quality Standards given the scale of the high levels of dispersion, and the limited duration of works.

Overall, there will be no significant effect on air quality and climate at sensitive receptors for the short-term duration of the construction phase.

Effect Rating

Construction stage traffic will have a **negative, imperceptible, local, direct** and **short-term** effect on air quality.

Table 8.18: Construction Effect - Traffic Emissions on Air Quality

Impact	Quality of Effect	Significance	Spatial Effect	Duration
Air Quality	Negative	Imperceptible	Local	Short term
Human Health	Negative	Not Significant	Local	Temporary
Ecological	Negative	Not Significant	Local	Temporary

[6] https://www.tiipublications.ie/library/PE-ENV-01107-01.pdf

8.4.1.3 Climate Change

There is the potential for a number of greenhouse gas emissions to atmosphere during the construction of the development. Construction vehicles, generators etc., may give rise to CO_2 and N_2O emissions. The Institute of Air Quality Management document Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate. Therefore, in accordance with the EPA Guidelines, the impact will be short-term, neutral and imperceptible.

Table 8.19 Construction Effects – Climate Change

Impact	Quality of Effect	Significance	Spatial Effect	Duration
GHG Emissions	Neutral	Imperceptible	Local	Short term

8.4.1.4 Summary of Construction Phase Effects

Table 8.20 Summary of Construction Effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Dust	Negative	Not Significant	Local	Temporary
Traffic/Vehicle Emissions	Negative	Imperceptible	local	Short term
Climate Change	Neutral	Imperceptible	local	Short term

8.4.2 Operational Phase

8.4.2.1 Air Quality and Dust Emissions

During the operational phase, the developer or a service company will carry out regular maintenance of the substation. Dust emissions associated with the operational phase of the Proposed Development are considered to be much lower than the construction phase. Minor dust emissions will arise from maintenance vehicles (light goods vehicles) estimated at 10 - 12 visits per month. The additional traffic generated during the operational phase will be negligible therefore the overall potential impact from dust during the operational phase will be long-term imperceptible neutral impact on air quality from dust emissions.

8.4.2.2 Vehicle Emissions

Exhaust emissions associated with the operational phase of the Proposed Development are considered to be much lower than the construction phase. Exhaust emissions will arise from maintenance vehicles (light goods vehicles) estimated at 10 – 12 visits per month. The additional traffic generated during the operational phase will

be negligible therefore the overall potential impact from dust during the operational phase will be long-term imperceptible neutral impact on air quality from dust emissions.

8.4.2.3 Climate

Once the proposed development is operational, there will be no significant direct emissions to the atmosphere. The substation does not produce emissions as there is no combustion process. It can be determined that the impact to climate during the operational stage of the proposed development is long-term, neutral and imperceptible.

Table 8.21 Summary of Operation Phase Effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Dust	Neutral	Imperceptible	Local	Long term
Traffic/Vehicle Emissions	Neutral	Imperceptible	Local	Long term
Climate Change	Neutral	Imperceptible	local	Long term

8.4.3 Decommissioning Phase

The scale of the works involved during the decommissioning phase would be less than during the construction phase. These are outlined in detail in Chapter 2 Project Description. A summary of the works includes:

- Disconnection of underground connection cable.
- All aboveground components removed at the substation site.
- All underground (>1m depth) collector cables coming to the substation from the wind turbines disconnected.
- The UGC would be disconnected and remain in situ.

Dust generating and vehicle related emissions will be a lot less during the decommissioning phase. Where possible materials will be recovered and recycled minimizing the energy required for disposal. The likely impact will be a slight temporary adverse effect.

Table 8.22 Summary of Decommissioning Effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Dust	Negative	Not Significant	Local	Temporary
Traffic/Vehicle Emissions	Negative	Imperceptible	local	Temporary
Climate Change	Neutral	Imperceptible	local	Temporary

8.4.4 Do-Nothing

If the proposed development were not to proceed, an opportunity to offset Greenhouse Gas Emissions (GHG) from fossil fuel based energy sources would be lost. The potential for Ireland to reach its renewable energy targets set out in the National Climate Action Plan 2023 and to contribute to climate change mitigation would be reduced.

Emissions of CO_2, NO_x and SO_2 from coal, oil and gas fired power plants that would otherwise have been displaced will continue, resulting in a continued deterioration in air quality.

Poor air quality in our urban centres is a growing concern. As stated on the EPA's website: '*The WHO estimates show that more than 400,000 premature deaths are attributable to poor air quality in Europe annually. In Ireland, the number of premature deaths attributable to poor air quality is estimated at 1,180 people and is mainly due to cardiovascular disease'*. The World Health Organisation (WHO) has described air pollution as the '*single biggest environmental health risk'*.

In a Do Nothing scenario, there would be an **adverse**, **moderate, long-term** effect should the proposed development not proceed, as emissions associated with the burning of fossil fuels will continue.

Table 8.23: Do Nothing Assessment of Air Quality and Climate Effects

Effect: Dust, Particulates and GHG Emissions				
	Quality of Effect	Significance	Spatial Extent	Duration
Whole Wind Farm Development	Adverse	Moderate	Extensive	Long- term

8.4.5 Cumulative Impacts and Effects

A recent (2024) desktop survey of proposed and permitted plans and projects within the adjacent townlands and large-scale developments (wind and solar) within 50km of the proposed development are detailed in Chapter 1. According to the IAQM guidance (2024) the potential for significant cumulative effects should also be considered. These are more likely to occur where the dust generating activities from separate development projects are in close proximity and likely to occur at the same time. With exception of the Dernacart Wind Farm, there are no other plans or projects in close proximity to cumulatively impact air quality or climate. The mitigation measures outlined in this report and the EIAR for Dernacart Wind Farm, including the Construction Environmental Management Plan will ensure that the cumulative impact to nearby receptors will not be significant.

The substation, collector cable and grid connection all serve to connect the permitted Dernacart Wind Farm to the electricity grid thereby providing a source of zero carbon, climate resilient and sustainable electricity supply.

The permitted Dernacart Wind Farm is located to the west of the proposed development substation and has not yet been constructed or is in operation.

Table 8.24 Summary of Cumulative Effects

Phase	Impact	Quality of Effect	Significance	Spatial Extent	Duration
Construction	Dust	Negative	Not Significant	Local	Short term
	Traffic/Vehicle Emissions	Negative	Not Significant	Local	Short term
	Climate Change	Neutral	Imperceptible	local	Short term
Operational	Dust	Neutral	Imperceptible	Local	Temporary
	Traffic/Vehicle Emissions	Neutral	Imperceptible	local	Temporary
	Climate Change	Positive	Significant	Extensive	Long term

8.5 Mitigation and Monitoring Measures

8.5.1 Mitigation Measures – Construction Phase

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust mitigation measures. The key aspects of controlling dust are listed below. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. In summary the measures which will be implemented will include:

• Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.

• Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

• Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

• Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph.

• Public roads in the vicinity of the site entrance will be regularly inspected for cleanliness and cleaned as necessary.

• Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.

• During movement of materials both on and off-site and before entrance onto public roads trucks will be adequately inspected to ensure no potential for dust emissions.

• Ensure regular maintenance of plant and equipment. Carry out periodic technical inspection of vehicles to ensure they perform most efficiently.

• All site vehicles and machinery will be switched off when not in use, and no idling of engines will be permitted.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

8.5.2 Mitigation Measures – Operational Phase

There are no mitigation measures proposed for the operational phase of the proposed development.

8.5.3 Decommissioning

Should decommissioning be undertaken Impacts resulting from the decommissioning phase are expected to be similar in nature, but smaller in scale in comparison to the construction phase. Therefore, similar mitigation measures such as those related to dust and construction vehicles are recommended.

8.6 Residual Impacts and Effects

8.6.1 Construction Stage

8.6.1.1 Air Quality and Dust Emissions

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared. Provided the dust minimisation measures outlined are adhered to, the predicted residual air quality impacts during the construction phase are direct, short term, negative, localised and imperceptible.

8.6.1.2 Human Health

The measures outlined in this chapter are best practice mitigation measures. They are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the predicted residual impact of construction of the proposed development is direct, negative, short-term and imperceptible with respect to human health.

8.6.2 Operational Stage

There are no operational emissions from the proposed development, therefore the impact on air quality, human health and climate is predicted to be long-term, neutral and imperceptible.

Table 8.25 Summary of Residual Effects

Phase	Impact	Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase	Dust	Negative	Imperceptible	Local	Temporary
	Traffic/Vehicle Emissions	Negative	Imperceptible	local	Temporary
	Climate Change	Neutral	Imperceptible	local	Temporary
Operational Phase	Dust	Neutral	Imperceptible	local	Long term
	Traffic/Vehicle Emissions	Neutral	Imperceptible	local	Long term
	Climate Change	Neutral	Imperceptible	local	Long term

8.7 Interaction with other Environmental Topics

An adverse impact due to air quality in either the construction or operational phase has the potential to cause human health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact complies with all ambient air quality legislative limits and, therefore, that the predicted residual impact is short-term, negative and imperceptible during the construction phase, and long-term, neutral and imperceptible during the operational phase. Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e., due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in AADT on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality during both construction and operational phases, are considered to be imperceptible. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interaction between air quality and land and soils.

8.8 Conclusions

The proposed amended substation, collector cable and grid connection are to facilitate the operation of the permitted Dernacart Wind Farm. Decarbonisation is critical to reducing rising global temperatures and the resultant adverse effects to the planet and all its occupants.

The proposed development will assist in facilitating this decarbonisation by connecting the wind farm to the national grid. It will also help achieve the objectives of the National Climate Action Plan and the Laois and Offaly County Council Climate Objectives.

The proposed development supports the creation of a renewable energy sources which aligns with the type of projects the above action plans propose for decarbonisation. This area is identified as ‘Open for consideration for Wind Energy Development’ in principle as part of the Offaly County Development Plan Wind Energy Strategy 2021-2027.

8.9 References

Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities,

Government of Ireland (2022) Carbon Budgets Available at https://www.gov.ie/pdf/?file=https://assets.gov.ie/222805/697ec730-a09f-4216-a54a-6a5cd0b358df.pdf#page=null

Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft September 2015

Environmental Protection Agency (2021) GHG Emissions Projections Report - Ireland's Greenhouse Gas Emissions Projections 2020 – 2040 Environmental Protection Agency (2022a)

Air Quality in Ireland 2022 (& previous annual reports)

Environmental Protection Agency (2022b) Guidelines on the Information to be contained in Environmental Impact Statements

Environmental Protection Agency (2022c) Ireland's Final Greenhouse Gas Emissions 1990 – 2020

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft Government of Ireland (2015)

Climate Action and Low Carbon Development Act

Government of Ireland (2019) Climate Action Plan 2019 Government of Ireland (2020)

Draft General Scheme of the Climate Action (Amendment) Bill 2019 Government of Ireland (2021a) Climate Action Plan 2021

Government of Ireland (2021b) Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)

Government of Ireland (2022) Climate Action Plan 2023

IAQM (2024) Guidance on the Assessment of Dust from Demolition and Construction

Met Éireann (2023) Met Éireann Website: www.met.ie

TII Publications (2022) Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document

TII Publications (2022) Air Quality Assessment of Proposed National Roads - Standard

Appendix A

EPA validated air quality data 2022 for the relevant pollutants.

Table 8.26: 2022 EPA Data $PM_{2.5}$ Zone D

Zone D ug/m3	Tipperary Town	Carrick-on-Shannon	Mallow	Birr	Claremorris	Cavan	Roscommon Town	Edenderry
CAFÉ Limit Values	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
***Annual mean**	9.1	6.3	7.5	9.5	6.1	7.3	7.6	13.4
Daily Max	55.0	31.3	28.0	68.3	256.8	65.3	34.3	66.5

Table 8.27: 2022 EPA Data $PM_{2.5}$ Zone C

Zone C ug/m3	Portlaoise	Ennis	Bray	Clonmel	Carlow Town	Letterkenny	Wexford Town	Lmk People's Park	Athlone
CAFÉ Limit Values	**20**	20	20	20	20	20	20	20	20
***Annual mean**	8.1	15.6	5.7	7.3	7.4	10.7	9.7	9.3	8.9
Daily Max	36.5	157.3	28.8	47.8	30.8	75.4	57.9	90.7	52.8

Table 8.28: 2022 EPA Data NO_2 Zone C & Zone D

	Meath Navan	Waterford Brownes Road	Limerick Henry Street	Kilkenny Seville Lodge	Portlaoise	Dundalk	Galway Eyre Square	Emo Court Co. Laois	Birr	Castlebar	Carrick-on-shannon	Kilkitt	Edenderry
µg/m3*	**Zone C**											**Zone D**	
CAFÉ Limit Values Annual	40	40	40	40	40	40	40	40	40	40	40	40	40
CAFÉ Limit Values Hourly	200	200	200	200	200	200	200	200	200	200	200	200	200
Annual mean**	21.0	7.3	15.2	4.8	9.0	10.4	17.6	3.3	12.4	7.5	11.5	2.0	7.3
Hourly max***	135.6	74.5	80.2	53.7	71.2	262.2	93.2	179.3	80.6	85.4	74.9	19.3	84.4

Table 8.29: 2022 EPA Data PM_{10} Zone D

Zone D ug/m3	Tipperary Town	Carrick-on-Shannon	Birr	Macroom	Roscommon Town	Edenderry	Mallow
CAFÉ Limit Values Annual	**40**	**40**	**40**	**40**	**40**	**40**	**40**
***Annual mean**	13.9	9.4	14.5	16.1	11.2	17.7	13.5
Daily Max	61.3	36.7	71.4	82.5	47.5	72.6	67.5

Table 8.30: 2022 EPA Data PM_{10} Zone C

Zone C ug/m3	Portlaoise	Clonmel	Claremorris	Wexford Town	Lmk People's Park	Athlone	Tralee
CAFÉ Limit Values Annual	**40**	**40**	**40**	**40**	**40**	**40**	**40**
***Annual mean**	12.7	11.0	7.9	14.5	13.9	12.3	17.9
Daily Max	49.5	51.4	29.9	64.0	92.8	54.7	99.5