MWP

Chapter 14 Air and Climate

Brittas Wind Farm

Brittas Wind Farm Ltd

Nov 2024

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Project No.	Doc. No.	Chapter Rev.	Date	Prepared By	Checked By	Approved By	Status
23318	6001	A	20/05/2024	KB	MT		Draft for Client Review
23318	6001	A	06/05/2024	KB	MT/EH		Draft for Legal Review
23318	6001	A	28/11/2024	KB	MT/EH	MT	ISSUE

MWP, Engineering and Environmental Consultants

Address: Park House, Bessboro Road, Blackrock, Cork, T12 X251

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I.S. EN ISO 9001:2015
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14. Air and Climate

14.1 Introduction

This chapter describes the likely significant effects the construction, operation and decommissioning of the proposed development will have on air quality and climate. For a full description of the proposed development, refer to Chapter 2 Description of the Proposed Development of this EIAR.

14.1.1 Competency of Assessor

The chapter and assessment was prepared by Kieran Barry BEng (Civil/Structural Engineering), PgDip (Environmental Protection), MIEnvSc. Kieran is an experienced Environmental Consultant at Malachy Walsh and Partners (MWP), having worked for 8 years in the environmental sector. Kieran works on a variety of infrastructure projects conducting environmental assessments and supporting the delivery of a number of environmental deliverables including Environmental Impact Assessment (EIA) Screening Reports, feasibility and constraints studies, route option assessments and Environmental Impact Assessment Reports (EIAR).

This assessment has been reviewed by Maura Talbot. Maura is a Chartered Environmental Practitioner with a Masters Degree in Geography and over twenty five years' experience in Environmental Consulting focussing primarily on Environmental Impact Assessment (EIA). She has prepared and reviewed a number of chapters for EIARs over her career, for a broad range of projects.

14.1.2 Policy, Guidelines and Legislation

The assessment has been prepared in accordance with the Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA 2022), as well as guidelines and legislation outlined in Section 14.1.2.1 to Section 14.1.2.3.

14.1.2.1 Air Quality

The statutory ambient air quality standards in Ireland are set out in the Ambient Air Quality Standards Regulations 2022, which incorporate the ambient air quality limits set out in Directive 2008/50/EC of the European Parliament and of the Council (21st May 2008) on ambient air quality and cleaner air for Europe (hereafter referred to as the CAFÉ Directive) (as amended by Directive EU 2015/1480), for a range of air pollutants. These are discussed further in Section 14.2.2.1.

In addition to the specific statutory air quality standards, the assessment has been prepared in accordance with national guidelines and policy documents, where available, in addition to international standards, policies and guidelines. These are summarised below:

- *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);*
- *Tipperary County Council Climate Action Plan 2024-2029;*
- *Tipperary County Development Plan 2022-2028;*

- *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 Sulfur Dioxide Global Update 2005 (WHO 2005).*

14.1.2.2 Climate

This assessment has been prepared in accordance with national guidelines and policies, where available, in addition to international standards, policies 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 Act 2015 (No.46 of 2015) as amended by Climate Action and Low Carbon Development (Amendment) Act 2021 (No.32 of 2021);*
- *Tipperary County Council Climate Action Plan 2024-2029;*
- *Tipperary County Development Plan 2022-2028;*
- *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 (UNFCC, 1997));*
- *Paris Agreement (UNFCC, 2015);*
- *Glasgow Climate Pact (COP26); and,*
- *Summary of Global Climate Action at COP 27 (UNFCC, 2022).*
- *Summary of Global Climate Action at COP 28 (UNFCC, 2023).*

14.1.2.3 Local Policy

A Tipperary County Development Plan 2022 – 2028 for the entire county of Tipperary was made on the 11th July 2022 by the Elected Members of Tipperary County Council. The Plan is a framework for how the council will deliver for communities, through protecting the environment, reducing energy demands, maintaining the viability of towns, villages and rural communities and supporting job creation. One of the planning objectives of the development plan is to prepare a Climate Action Plan for Tipperary in compliance with the Climate Action and Low Carbon Development (Amendment) Bill (DECC, 2020)).

The Tipperary County Council Climate Action Plan 2024-2029 outlines the main climate risks facing Tipperary and the current levels of greenhouse gas emissions of the Council and of the county. The plan sets out 100 Council climate actions including the Council's commitment to achieving its own emissions reductions (51%) and energy efficiency (50%) targets.

There are nine strategic goals which set out the context for climate actions and establish a structured or thematic arrangement of actions:

- Strategic Goal 1: To show leadership and ambition in 'Setting the Scene for Going Green' by achieving our own 50% energy efficiency target by 2030, by mainstreaming climate action (mitigation and adaptation) and governance change and awareness across our services, by seeking to influence local and national policy using this leadership position, and by developing, piloting and supporting innovation for transformative decarbonisation and climate action projects;
- Strategic Goal 2: Protect our assets and critical infrastructure from extreme weather events, and to ensure a co-ordinated and resourced emergency response from all climate related emergencies and events, including flooding;
- Strategic Goal 3: To achieve our own 51% greenhouse gas emission reductions target by 2030 though an increase in the use of renewable energy sources and increased energy efficiency throughout our housing, offices, infrastructure and transport fleet in line with national 2030 and 2050 targets;
- Strategic Goal 4: Through our spatial planning policy and objectives support the Core Strategy of the Tipperary County Development Plan (and any review thereof), having consideration to core objectives as they relate to sustainable development and a Just Transition, including aspects such as Town Centre First, Active Travel, Sustainable Energy and Compact Development etc;
- Strategic Goal 5: Promote and protect our environment, and its biodiversity and water catchments as key enablers of climate adaptation and mitigation across the county through delivery of sustainable services, including those with a focus on nature-based solutions, in collaboration with sectors and communities;
- Strategic Goal 6: Build capacity and readiness with communities and other strategic partners for transformative climate action and a 'Just Transition', using capacity building programmes, policy/financial instruments and local development and wellbeing programmes, and to promote climate action and green skills in training and education in partnership with Education and Training Boards (ETBs) and Local Enterprise Offices (LEOs);
- Strategic Goal 7: Embed climate action change and circular economy approach in implementation of local economic development strategies and plans for example, the Local Economic and Community Plan, Local Development Strategy etc;
- Strategic Goal 8: Enable the development of a circular economy across sectors and communities based in sustainable practices using renewable and carbon neutral technology and to increase the proportion of green procurement so we can influence, measure and reduce emissions from the production, transportation and disposal of goods and services we procure and use and enable a circular economy through our own actions; and
- Strategic Goal 9: Influence, co-ordinate, facilitate and advocate for other agencies, sectors and communities wherever feasible through the delivery of our services and in the implementation of other sectoral plans at local level.

14.2 Methodology

The methodology accords with guidance and best practice outlined in Sections 14.1.2.

The existing air quality was characterised at a local level to establish a baseline. The nature, scale and duration of the construction works, operational and decommissioning works was examined and its potential to affect local air quality assessed. Mitigation measures are described to minimise the potential effects.

As part of the climate 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.

14.2.1 Scope of Assessment

This chapter presents the assessment of whether the proposed project would be likely to result in significant air quality and climate effects. The cumulative effect of the proposed development in combination with other existing, permitted and proposed developments is then assessed to determine any likely cumulative significant air quality and climate effects.

The potential effects of the decommissioning phase will be of similar magnitude, if not slightly less, than the construction phase. Therefore, the outcome of the construction phase assessment should be taken as representative of the decommissioning phase effects. Once operational, there will be no air/ghg emissions from the wind farm development, including turbines, grid connection, BESS and substation, apart from those associated with maintenance vehicles. The climate assessment includes elements of the construction, operational and decommissioning phases, however a detailed air quality assessment was not deemed necessary for the operational phase of development, given the small scale of air emissions associated with this phase.

There will be approximately 1.4 ha of trees and 4,086m of hedgerow will be felled to facilitate wind farm infrastructure (See Chapter 2 for full details).

The felled trees and hedgerow will be re-planted elsewhere; ensuring no net loss of carbon sequestration. However, the potential effect of the early felling of the trees on carbon sequestration has been assessed.

14.2.2 Assessment Criteria

14.2.2.1 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 (CAFÉ) Directive (2008/50/EC) (as amended by Directive EU 2015/1480) was published in May 2008 and is transposed into Irish legislation by the Air Quality Standards Regulations 2022 (S.I. No. 739/2022).

The Air Quality Regulations set limit values for the pollutants nitrogen dioxide (NO_2), and nitrogen oxides (NO_x), particulate matter (PM) with an aerodynamic diameter of less than 10 microns (PM10), PM with an aerodynamic diameter of less than 10 microns (PM10), PM with an aerodynamic diameter of less than 2.5 microns (PM2.5), lead (Pb), sulphur dioxide (SO_2), benzene and carbon monoxide (CO), refer to Table 14-1.

Table 14-1: Ambient Air Quality Limits

Pollutant	Regulation	Limit Type	Value
NO_2	S.I. No. 739/2022	Hourly limit for protection of human health – not to be exceeded more than 18 times/year	200µg/m^3 NO_2
Nitrogen Oxides ($NO + NO_2$)	S.I. No. 739/2022	Annual limit for protection of human health	40µg/m^3 NO_2
Nitrogen Oxides ($NO + NO_2$)	S.I. No. 739/2022	Critical limit for the protection of vegetation and natural ecosystems	30µg/m^3 $NO + NO_2$
Lead	S.I. No. 739/2022	Annual limit for protection of human health	0.5µg/m^3

Pollutant	Regulation	Limit Type	Value
SO_2	S.I. No. 739/2022	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	350µg/m³
		Daily limit for protection of human health – not to be exceeded more than 3 times/year	125µg/m³
		Critical limit for the protection of vegetation and natural ecosystems (calendar year and winter)	20µg/m³
PM (as PM10)	S.I. No. 739/2022	24-hour limit for protection of human health – not to be exceeded more than 35 times/year	50µg/m³
		Annual limit for protection of human health	40µg/m³
PM (as PM2.5)	S.I. No. 739/2022	Annual limit for protection of human health	25µg/m³
Benzene	S.I. No. 739/2022	Annual limit for protection of human health	5µg/m³
CO	S.I. No. 739/2022	8-hour limit (on a rolling basis) for protection of human health	10mg/m³

Dust

There is greater potential for temporary disturbance to nearby receptors to occur as a result of fugitive dust from the excavation and transport of soil and materials during construction.

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 PM10 and PM2.5 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 for the construction stage of a project 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/decommissioning and operational traffic is not required.

14.2.2.2 Climate

In order to assess whether the carbon savings associated with the proposed renewable energy development will significantly out-weigh any potential carbon losses, a methodology made available by the Scottish Government (2019) in tabular spreadsheet format titled '*Calculating carbon savings from wind farms on Scottish peatlands'* was applied to this development.

This 'carbon calculator' is the Scottish Government's tool developed to support the process of determining the carbon effect of wind farm developments in Scotland. The purpose of the tool is to assess, in a comprehensive and consistent way, the carbon effect of wind farm developments. This is done by comparing the carbon costs of wind farm developments with the carbon savings attributable to the wind farm.

As there is no comparable Irish version, it is considered appropriate to adopt the Scottish methodology which has been tried and tested and subject to audit by the Scottish Environmental Protection Agency. This is accepted as best practice in Ireland and therefore this method has been adopted for this assessment to determine the potential carbon savings and losses from the proposed development, refer to Section 14.4.3.3.

It is important to note that there is no peat located within the majority of proposed development area. No peat is mapped on the GSI maps for the site. During a site walkover a small area of peaty type soil was noted in the north-eastern corner of the site. Site investigations found small patches of peat less than 0.5m deep at the substation site, and at Turbine locations 3 (T3). Although there are minimal amounts of peat, the predicted volumes of peat extraction have been included in carbon calculator as part of this assessment.

14.2.3 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. 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.

14.3 Existing Environment

The proposed wind farm is located 3km north of Thurles town in the following townlands: Brittas, Rossestown, Clobanna, Brownstown, Killeenleigh and Kilkillahara in County Tipperary, refer to Figure 14-1.

The affected lands are made up of agricultural fields bounded by hedgerows and treelines. An area of broadleaf forestry is located at the southwest of the site. The River Suir transects the site from north to south. The N62 is located west of the site, running north to south, connecting Templemore to Thurles. The L8017 local road traverses the centre of site from east to west, crossing the River Suir at a bridge point.

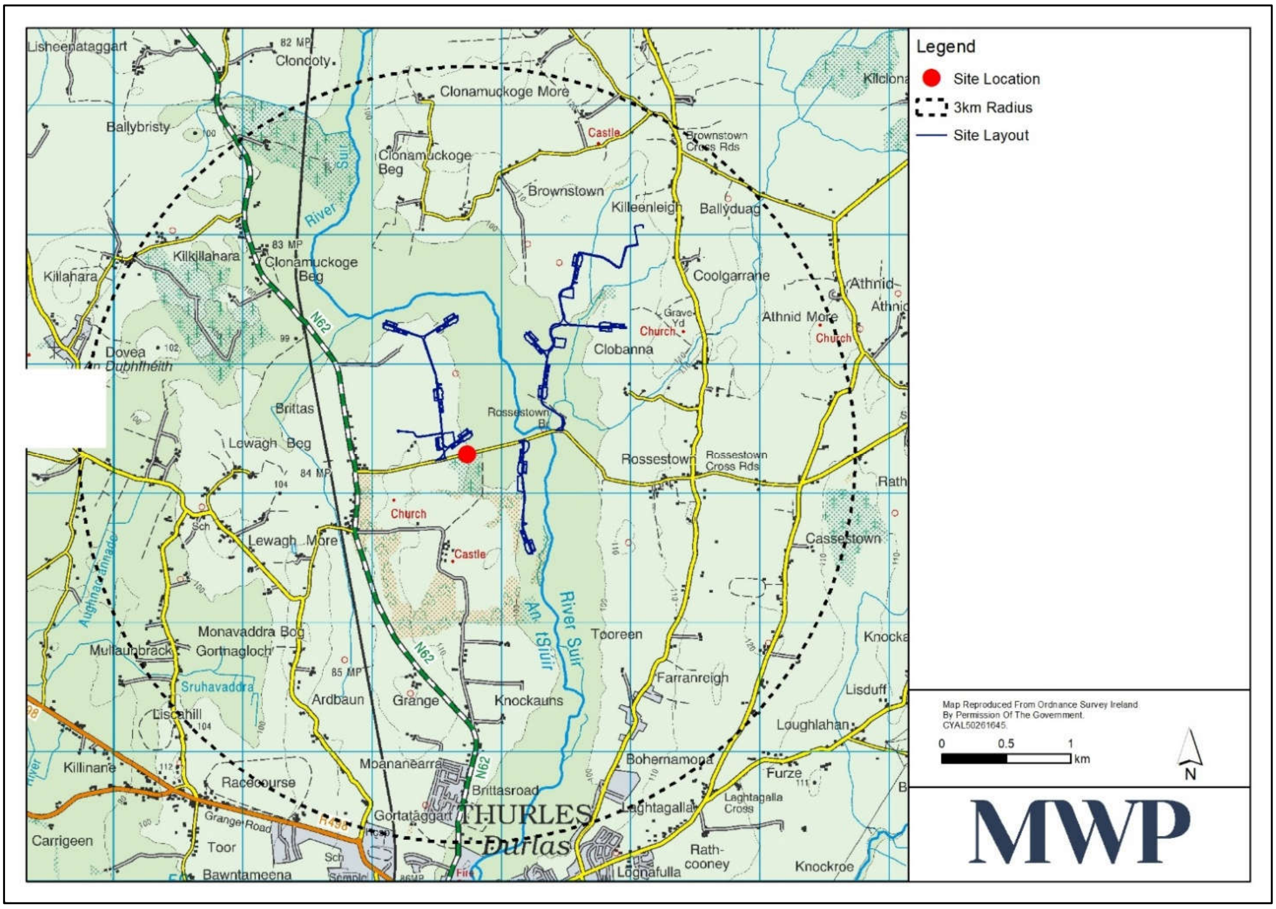

Figure 14-1: Site Location

There are several urban centres within 25km of the proposed development site, including Thurles which is located 3.5km south of the proposed development, Urlingford (population 1,196, CSO 2022) which is approximately 15km to the east, Cashel (4,805, CSO 2022) which 22.5km south west and Templemore (2,055, CSO 2022) which is 9.5km to north west. Along with local traffic (CO_2, NO_x), agricultural practices on nearby farmland (CH_4) and forestry operations (CO_2, NO_x) i.e. machinery used for tree felling, these urban centres are the largest nearby potential sources of pollution.

Representative Environmental Protection Agency (EPA) ambient air quality data has been used to characterize the existing air quality in the area.

14.3.1 Existing Environment Air Quality

14.3.1.1 EPA Air Quality Sensitivity of the Receiving Environment

The Environmental Protection Agency's Air Quality Index for Health (AQIH) is a number from 1 to 10 that tells you what the air quality currently is in the station nearest you and whether or not this might affect the health of you or your child. A reading of 10 means the air quality is very poor and a reading of one to three inclusive means that the air quality is good. The AQIH is based on measurements of five air pollutants all of which can harm health. The five pollutants are:

- Ozone gas;
- Nitrogen dioxide gas;
- Sulphur dioxide gas;
- PM2.5 particles; and,
- PM10 particles.

In areas of Fair to Poor air quality i.e. AQIH ranking 4 to 10, certain types of outdoor activity should be restricted or avoided for at risk individuals and the general population depending on the AQIH ranking.

The nearest available data from air quality stations to the proposed development is in Callan Road, Kilkenny, which is located approximately 37km to the south west. This station monitors Nitrogen Dioxide (NO_2), Ozone (O3), and Particulate Matter (PM10) and live readings are accessible via the EPA's website (https://airquality.ie/). The average concentrations, recorded on 2nd December 2024, for a 24 hour period are as follows: NO2 – 3.93 µg/m³, O3 –59.72 µg/m³ and PM10 – 8.67 µg/m³

The Kilkenny Station updates every 8 to 24 hours with the calculated Air Quality Index for Health (AQIH).). As shown in, Figure 14-2, the air quality index, viewed 2nd December 2024, characterised by this station was classified as '2- Good'.

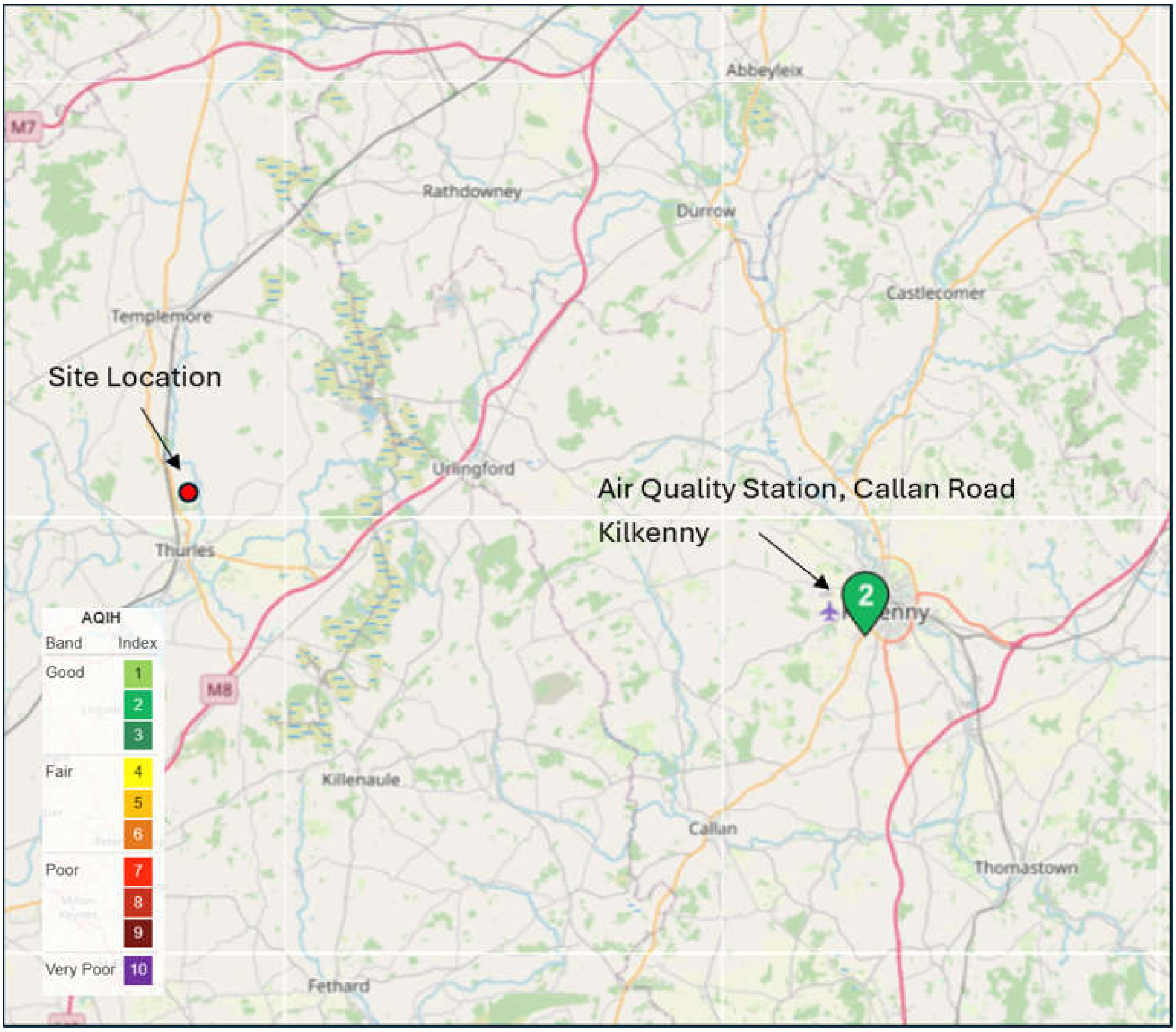

Figure 14-2: Existing Air Quality Index for Health (AQIH) (www.epa.ie)

In terms of annual air quality data, monitoring programmes have been undertaken in recent years by the EPA. The most recent annual report on air quality, Air Quality Monitoring Report (EPA 2022), details the range and scope of monitoring undertaken throughout Ireland. As part of the implementation of the Air Quality Standards Regulations (S.I. No. 739/2022), four air quality zones have been defined in Ireland for air quality management and assessment purposes. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 23 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The rural area which the proposed development is located is classed as Zone D.

Annual mean values for CO, O_3, NO_2, SO_2, PM2.5 and PM10 for Zone D areas for the period 2018 to 2023 are shown in Table 14-2.

Table 14-2: EPA Annual Monitoring Data and Ambient Air Quality Limits

Averaging Period	Years 2018, 2019, 2021, 2022. 2023	Limit Type	Limit Values
Max 8-hr value	1.2 to 3.4 mg/m^3	8-hour limit (on a rolling basis) for pro20	10 mg/m^3
Hourly Max NO_2	14.7 µg/m^3 to 179.3 µg/m^3	Hourly limit for protection of human health – not to be exceeded more than 18 times/year	200µg/m^3
Hourly Max SO_2	2.9 µg/m^3 to 424.5 µg/m^3	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	350µg/m^3
Daily Max SO_2	0.1 µg/m^3 to 80.9 µg/m^3	Daily limit for protection of human health – not to be exceeded more than 3 times/year	125µg/m^3
Annual Mean SO_2	0.7 µg/m^3 to 11.8 µg/m^3	Critical limit for the protection of vegetation and natural ecosystems (calendar year and winter)	20µg/m^3
Annual Mean PM2.5	4 µg/m^3 to 17.8 µg/m^3	Annual limit for protection of human health	25µg/m^3
Annual Mean PM10	7 µg/m^3 to 28 µg/m^3	24-hour limit for protection of human health – not to be exceeded more than 35 times/year	50µg/m^3
		Annual limit for protection of human health	40µg/m^3
Annual Mean PM10	7 µg/m^3 to 28 µg/m^3	Annual limit for protection of human health	40µg/m^3
Daily Max PM10	18 µg/m^3 to 102 µg/m^3	24-hour limit for protection of human health – not to be exceeded more than 35 times/year	50 µg/m^3

In general, existing baseline levels of CO, NO_2, SO_2, PM2.5 and PM10 are well below ambient air quality limit values in the vicinity of the proposed development, however there was some exceptions where ambient limits were exceeded.

There were instances of daily max PM10 exceedances recorded for some Zone D towns however annual mean values were below limit values.

The 2020 EPA Air Quality report discusses the spike in SO_2 annual levels recorded for zone D and notes that exceedances were linked to high levels of SO_2 at the Letterkenny station. The 2020 EPA Air Quality report notes that large spikes in 2020 were recorded during the winter heating season. The SO_2 spikes were recorded during typical hours when fires are lit and therefore were linked to burning of solid fuel. SO_2 levels were below ambient limits at each of the other Zone D stations for 2020 and were below SO_2 limits at all Zone D stations for the other recorded years (2018, 2019, 2021, 2022, 2023).

14.3.1.2 Dust Sensitivity of the Receiving Environment

In line with IAQM Guidelines, the sensitivity of the area must first be assessed. Both receptor sensitivity and proximity to the proposed development are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity, while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity.

For the purposes of this assessment, the area of the Wind Farm Site, including wind turbine areas, substation, BESS and borrow pit, are considered main sources of dust during construction and are assessed separately to the grid connection.

There will be some dust potential from turbine delivery route accommodation works however, these works are small in scale, temporary and sections of accommodation work areas will be spread out and therefore no significant dust impacts. It was therefore considered that no detailed dust assessment was required for turbine delivery accommodation works so the dust sensitivity of the receiving environment at the locations of the turbine delivery accommodation works is therefore not described in this section.

In terms of receptor sensitivity to dust soiling, the nearest receptor to the main wind farm site is approximately 294m from the substation, refer to Figure 14-3. The worst-case sensitivity of the area to dust soiling is therefore considered to be Low as per IAQM guidance criteria set out in Table 14-3, given that there are no receptors within 200m.

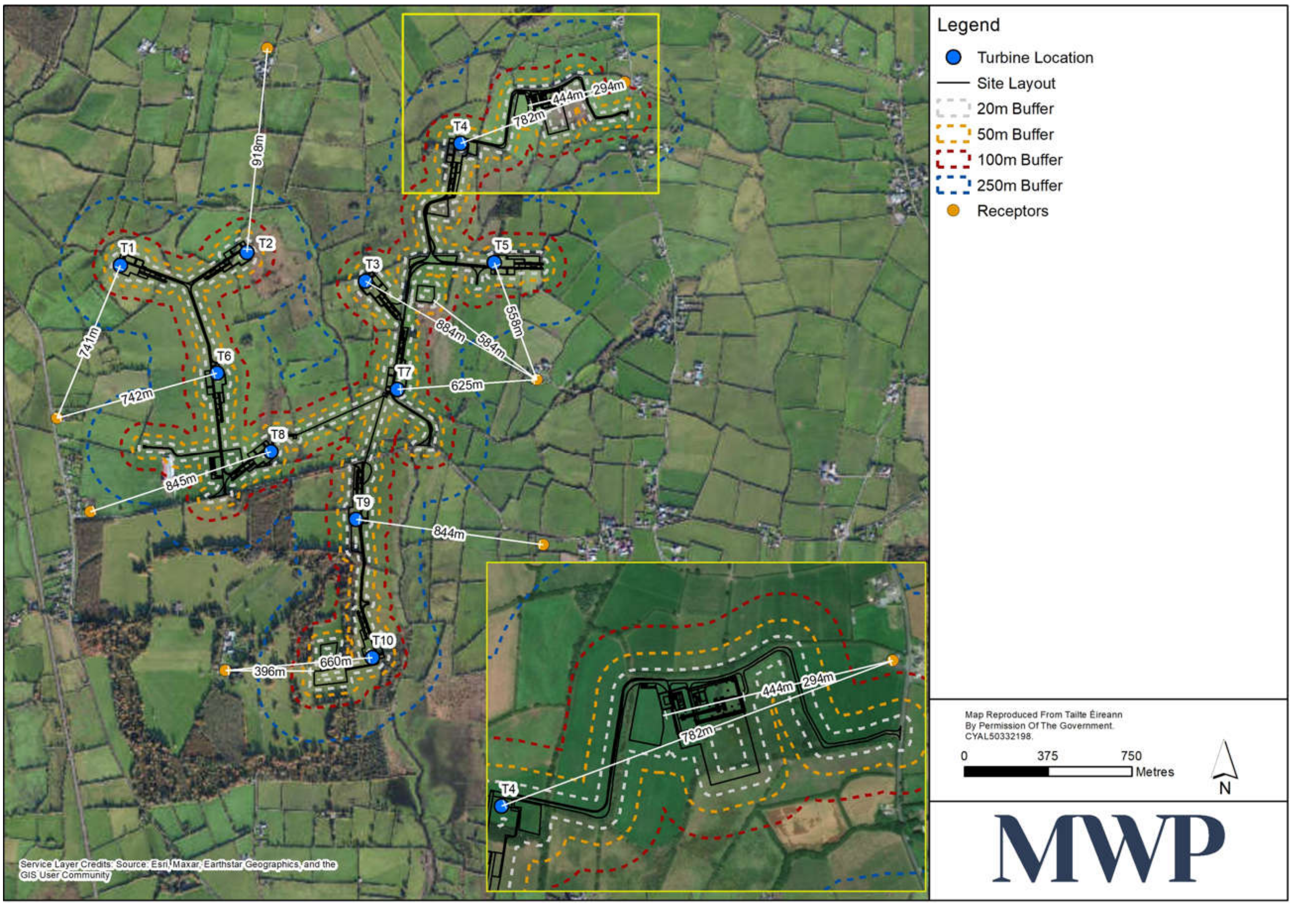

Figure 14-3 Main Wind Area and Nearest Dwellings

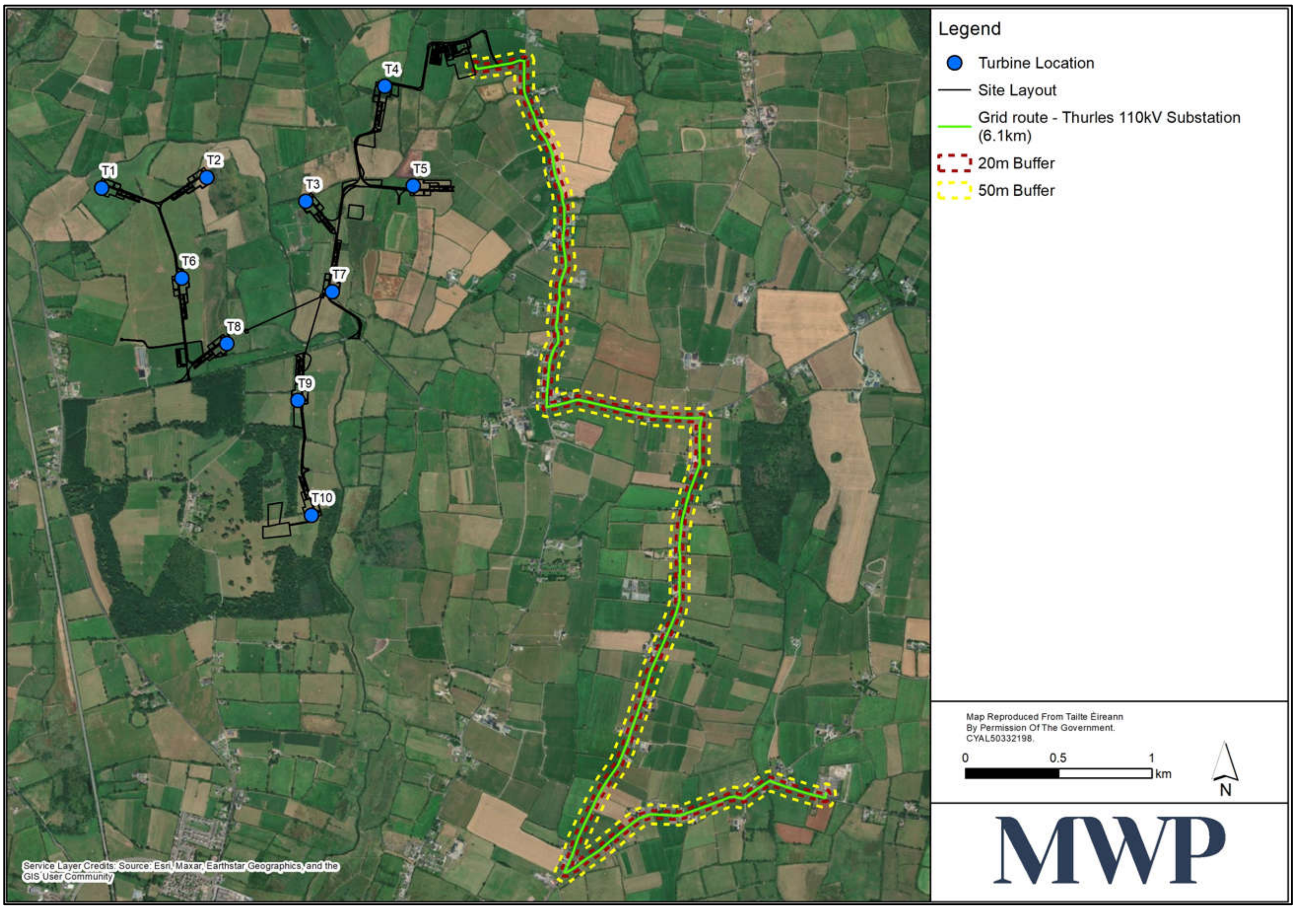

Figure 14-4 Grid Connection and Nearest Dwellings

There are residential receptors along the roadside of the proposed grid connection route. Approximately 60 receptors are located within a 50m buffer zone of the grid connection, as shown in Figure 14-4. Due to the linear nature of the grid connection works which will be completed in sections, not all properties will be impacted at once, therefore it is considered to be no more than 1 to 10 no. receptors impacted at any time. The worst-case sensitivity of grid connection to dust soiling is therefore considered to be Medium as per IAQM guidance criteria set out in Table 14-3 given that no more than 1-10 receptors will potentially be impacted at any time.

Table 14-3: Sensitivity of the Area to Dust Soil Effects on People and Property (Source: IAQM 2024)

Receptor Sensitivity	Number of Receptors	Distance from source (m)			
		<20	<50	<100	<200
High	>100	High	High	Low	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

Human Health Impact Sensitivity of the Receiving Environment

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity and the number of receptors affected within various distance bands from the construction works. The annual mean PM10 concentration for Zone D was 7 µg/m^3 to 28 µg/m^3, refer to **Table 14-2**. Taking a conservative approach, the value of 28 µg/m^3 is taken as the Annual Mean PM10 concentration. Given the annual mean PM10 concentration, the worst-case sensitivity of residential receptors to human health impacts from the main wind farm area dust, as per IAQM guidance criteria set out in **Table 14-3** is considered to be **Low,** given that there are no receptors within 295m. For the grid connection works, the sensitivity of the receptors, as per IAQM guidance criteria set out in **Table 14-3** are considered to be **Medium,** given that there are no more than 1-10 receptors within 20m of works.

Table 14-4: Sensitivity of the Area to Human Health Impacts (Source: IAQM 2024)

Receptor Sensitivity	Annual Mean PM10 Concentration	Number of Receptors	Distance from source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	>24µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	<32 µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Ecological Impact Sensitivity of the Receiving Environment

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to ecological impacts from dust. The criteria take into consideration whether the receiving environment is classified as a Special Area of Conservation (SAC), a Special Protected Area (SPA), a Natura Heritage Area (NHA) or a proposed Natural Heritage Area (pNHA) as dictated by the EU Habitats Directive or whether the site is a local natura reserve or home to a sensitive plant or animal species. The proposed development site is not located in the immediate vicinity of any such designated site. The nearest designated site is Cabragh Wetland pNHA, which is located approximately 1.2km south of the proposed development. The sensitivity of the area to ecological impacts, as per IAQM guidance criteria set out in Table 14-5, can therefore be considered Low.

Table 14-5: Sensitivity of the Area to Ecological Impacts

Sensitivity of Area	Distance from the Source (m)	
	<20	<50
High	Medium	Medium
Medium	Medium	Low
Low	Low	Low

14.3.2 Sensitivity of the Receiving Global Climate

14.3.2.1 Global Climate

Climate change is considered in a global rather than local context. Every year, the World Meteorological Organisation (WMO) issues a Report on the State of the Global Climate. It is based on data provided by National Meteorological and Hydrological Services and other national and international organisations. Some of the key messages in the latest available annual report, 'State of the Global Climate 2023' are as follows and can be considered indicators of climate change at a global scale and are representative of the type of issues the globe is facing as a result of climate change:

- Concentrations of the three main greenhouse gases – carbon dioxide, methane and nitrous oxide – reached record-high observed 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 main greenhouse gases continued to increase in 2023.
- The global mean near-surface temperature in 2023 was 1.45 ± 0.12 °C above the 1850–1900 average. 2023 was the warmest year in the 174-year observational record, clearly surpassing the previous joint warmest years, 2016 at 1.29 ± 0.12 °C above the 1850–1900 average and 2020 at 1.27 ± 0.13 °C.
- The past nine years, 2015–2023, were the nine warmest years on record.
- Record monthly global near-surface temperatures have been observed for the ocean – from April through December – and, starting slightly later, the land – from July through November.
- The 10-year average 2014–2023 global temperature was 1.20 ± 0.12 °C above the 1850–1900 average, making it the warmest 10-year period on record.
- In 2023, ocean heat content reached its highest level in the 65-year observational record.
- In 2023, global mean sea level reached a record high in the satellite record (from 1993 to present), reflecting continued ocean warming as well as the melting of glaciers and ice sheets

- The rate of global mean sea-level rise in the past 10 years (2014–2023) is more than twice the rate of sea-level rise in the first decade of the satellite record (1993–2002).
- Arctic sea-ice extent remained well below normal in 2023, with the annual maximum and annual minimum extents being respectively the fifth and sixth lowest in the 45-year satellite record.
- Antarctic sea-ice extent reached an absolute record low for the satellite era (from 1979 to present) in February. Sea-ice extent was at a record low for the time of year from June until early November, and the annual maximum in September was about 1 million km2 below the previous record low maximum.
- It was the warmest summer on record at Summit Station, 3.4 °C warmer than the 1991–2020 average and 1.0 °C warmer than the previous record.
- Preliminary data indicate the annual mass balance of a global set of reference glaciers for the hydrological year 2022/2023 was –1.2 m of water equivalent. This is nominally the largest loss of ice on record (1950–2023), driven by extremely negative mass balance in both western North America and Europe.
- Seasonal snow cover in the northern hemisphere has been experiencing a long-term decline in the late spring and summer. Northern hemisphere snow-cover extent for May was the eighth lowest on record (1967–2023). North American snow-cover extent for May 2023 was the lowest on record (1967–2023).
- A prolonged period of La Niña from mid-2020 to early 2023 gave way to El Niño conditions, which were well established by September 2023, contributing to the observed rise in global mean sea-surface temperatures during 2023.
- Extreme weather continues to lead to severe socioeconomic impacts. Extreme heat affected many parts of the world. Wildfires in Canada, Europe and Hawaii (United States of America) led to loss of life, the destruction of homes and large-scale air pollution. Flooding associated with extreme rainfall from Mediterranean Cyclone Daniel affected Greece, Bulgaria, Türkiye and Libya, with particularly heavy loss of life in Libya.
- Food security, population displacements and impacts on vulnerable populations continued to be of mounting 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 the vulnerability of many who had already been uprooted by complex multi-causal situations of conflict and violence.
- The development and implementation of local disaster risk reduction strategies has increased since the adoption of the Sendai Framework for Disaster Risk Reduction. One of the essential components for reducing the impact of disasters is to have effective multi-hazard early warning systems.

14.3.2.2 IPPC: AR6 Synthesis Report – Climate Change 2023

The Synthesis Report (SYR) of the IPCC Sixth Assessment Report (AR6) summarises the state of knowledge of climate change, its widespread impacts and risks, and climate change mitigation and adaption. It integrates the main findings of the Sixth Assessment Report (AR6) based on contributions from the three Working Groups[1], and the three Special Reports[2].

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[1] The three Working Group contributions to AR6 are: AR6 Climate Change 2021: The Physical Science Basis; AR6 Climate Change 2022: Impacts, Adaption and Vulnerability; and AR6 Climate Change 2022: Mitigation of Climate Change. Their assessments cover scientific literature accepted for publication respectively by 31 January 2021, 1 September 2021 and 11 October 2021.

[2] . The three Special Reports are: Global Warming of 1.5^{o} (2018): an IPPC Special Report on the impacts of global warming of 1.5^{o}C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening

The report recognises the interdependence of climate, ecosystems and biodiversity, and human societies. It recognises the value of diverse forms of knowledge and the close linkages between climate change adaption, mitigation, ecosystem health, human well-being and sustainable development. The report reflects the increasing diversity of actors involved in climate action.

Some key findings[3] of the report are as follows and are categorised next, under 'Current Status and Trends, Future Climate Change, Risks and Long-Term Responses, Responses in the Near Term'. Each finding is grounded in an evaluation of underlying evidence and agreement.

A. Current Status and Trends

Observed Warning and its Causes

- A.1 Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850-1900 temperatures in 2011-2020. Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions arising from unsustainable energy use, land use and land-use change, lifestyles and patterns of consumption, and production across regions, between and within countries, and among individuals (*high confidence*).

Observed Changes and Impacts

- A.2 Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people (*high confidence*). Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected (*high confidence*).

Current Progress in Adaption and Gaps and Challenges

- A.3 Adaption planning and implementation has progressed across all sectors and regions, with documented benefits and varying effectiveness. Despite progress, adaption gaps exist, and will continue to grow at current rates of implementation. Hard and soft limits to adaption have been reached in some ecosystems and regions. Maladaptation is happening in some sectors and regions. Current global financial flows for adaption are insufficient for, and constrain implementation of adaption options, especially in developing countries (high confidence).

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the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty; Climate Change and Land (2019): an IPPC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems; and The Ocean and Cryosphere in a Changing Climate (2019). The Special Reports cover scientific literature accepted for publication respectively by 15 May 2018, 7 April 2019, and 15 May 2019.

[3] The IPCC calibrated language uses five qualifiers to express a level of confidence: very low, low, medium, high and very high, and typeset in italics, for example *medium confidence*. The following terms are used to indicate the assessed likelihood of an outcome or a result: virtually certain 99-100% probability, very likely 90-100%, likely 66-100%, more likely than not >50-100%, about as likely as not 33-66%, unlikely 0-33%, very unlikely 0-10%, exceptionally unlikely 0-1%. Additional terms (extremely likely 95-100%; more likely than not >50-100%; and extremely unlikely 0-5%) are also used when appropriate. Assessed likelihood is typeset in italics, e.g., *very likely*. This is consistent with AR5 and the other AR6 Reports.

Current Progress in Adaption and Gaps and Challenges

- A.4 Policies and laws addressing mitigation have consistently expanded since AR5. Global GHG emissions in 2030 implied by nationally determined contributions (NDCs) announced by October 2021 make it likely that warming will exceed 1.5°C during the 21st century and make it harder to limit warming below 2°C. There are gaps between projected emissions from implemented policies and those from NDCs. Finance flows fall short of the levels needed to meet climate goals across all sectors and regions (*high confidence*).

B. Future Climate Change, Risks and Long-Term Responses

Future Climate Change

- B.1 Continued greenhouse gas emissions will lead to increasing global warming, with the best estimate of reaching 1.5°C in the near term in considered scenarios and modelled pathways. Every increment of global warming will intensify multiple and concurrent hazards (*high confidence*). Deep, rapid, and sustained reductions in greenhouse gas emissions would lead to a discernible slowdown in global warming within two decades, and also to discernible changes in atmospheric composition within a few years (*high confidence*).

Climate Change Impacts and Climate-Related Risks

- B.2 For any given warning level, many climate-related risks are higher than assessed in AR5, and project long-term impacts are up to multiple times higher than currently observed (*high confidence*). Risks and projected adverse impacts, and related losses and damages from climate change escalate with every increment of global warming (*very high confidence*). Climatic and non-climatic risks will increasingly interact, creating compound and cascading risks that are more complex and difficult to manage (*high confidence*).

Likelihood and Risks of Unavoidable, Irreversible or Abrupt Changes

- B.3 Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse emissions reduction. The likelihood of abrupt and/or irreversible changes increases with higher global warming levels. Similarly, the probability of low-likelihood outcomes associated with potentially very large adverse impacts increases with higher global warming levels (*high confidence*).

Adaptation Options and their Limits in a Warmer World

- B.4 Adaption options that are feasible and effective today will become constrained and less effective with increasing global warming. With increasing global warming, losses and damages will increase and additional human and natural systems will reach adaption limits. Maladaptation can be avoided by flexible, multi-sectoral, inclusive, long-term planning and implementation of adaptation actions, with co-benefits to many sectors and systems (*high confidence*).

Carbon Budgets and Net Zero Emissions

- B.5 Limiting human-caused global warming requires net zero CO_2 emissions. Cumulative carbon emissions until the time of reaching net-zero CO_2 emissions and the level of greenhouse gas emission reductions this decade, largely determine whether warming can be limited to 1.5°C or 2°C (*high confidence*). Projected CO_2 emissions from existing fossil fuel infrastructure without additional abatement would exceed the remaining carbon budget for 1.5°C (50%) (*high confidence*).

Mitigation Pathways

- B.6 All global modelled pathways that limit warming to 1.5°C (>50%) with no or limited overshoot, and those that limit warming to 2°C (>67%), involve rapid and deep and, in most cases, immediate greenhouse emissions reductions in all sectors this decade. Global net zero CO_2 emissions are reached for these pathway categories, in the early 2050s and around the early 2070s, respectively (*high confidence*).

Overshoot: Exceeding a Warming Level and Returning

- B.7 If warming exceeds a specified level such as 1.5°C, it could gradually be reduced again by achieving and sustaining net adverse global CO_2 emissions. This would require additional deployment of carbon dioxide removal, compared to pathways without overshoot, leading to greater feasibility and sustainability concerns. Overshoot entails adverse impacts, some irreversible, and additional risks for human and natural systems, all growing with the magnitude and duration of overshoot (*high confidence*).

C. Responses in the Near Term

Urgency of Near-Term Integrated Climate Action

- C.1 Climate change is a threat to human well-being and planetary health (*very high confidence*). There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all (*very high confidence*). Climate resilient development integrates adaptation and mitigation to advance sustainable development for all and is enabled by increased international cooperation, including improved access to adequate financial resources, particularly for vulnerable regions, sectors and groups, and inclusive governance and coordinated policies (*high confidence*). The choices and actions implemented in this decade will have impacts now and for thousands of years (*high confidence*).

The Benefits of Near-Term Action

- C.2 Deep, rapid and sustained mitigation and accelerated implementation of adaption actions in this decade would reduce projected losses and damages for humans and ecosystems (*very high confidence*), and deliver many co-benefits, especially for air quality and health (*high confidence*). Delayed mitigation and adaptation action would lock-in high emissions infrastructure, raise risks of stranded assets and cost-escalation, reduce feasibility, and increase losses and damages (*high confidence*). Near-term actions involve high up-front investments and potentially disruptive changes that can be lessened by a range of enabling policies (*high confidence).*

Mitigation and Adaption Options across Systems

- C.3 Rapid and far-reaching transitions across all sectors and systems are necessary to achieve deep and sustained emissions reductions and secure a liveable and sustainable future for all. These system transitions involve a significant upscaling of a wide portfolio of mitigation and adaption options. Feasible, effective, and low-cost options for mitigation and adaptation are already available, with differences across systems and regions (*high confidence*).
- C.4 Accelerated and equitable action in mitigating and adapting to climate change impacts is critical to sustainable development. Mitigation and adaptation actions have more synergies than trade-offs with Sustainable Development Goals. Synergies and trade-offs depend on context and scale of implementation (*high confidence*).
- C.5 Prioritising equity, climate justice, social justice, inclusion and just transition processes can enable adaptation and ambitious mitigation actions and climate resilient development. Adaptation outcomes are enhanced by increased support to regions and people with the highest vulnerability to climatic hazards. Integrating climate adaptation into social protection programs improves resilience. Many options are available for reducing emission-intensive consumption, including through behavioural and lifestyle changes, with co-benefits for social well-being (*high confidence*).

- C.6 Effective climate action is enabled by political commitment, well-aligned multilevel governance, institutional frameworks, laws, policies and strategies and enhanced access to finance and technology. Clear goals, coordination across multiple policy domains, and inclusive governance processes facilitate effective climate action. Regulatory and economic instruments can support deep emissions reductions and climate resilience if scaled up and applied widely. Climate resilient development, benefits from drawing on diverse knowledge (*high confidence*).
- C.7 Finance, technology, and international cooperation are critical enablers for accelerated climate action. If climate goals are to be achieved, both adaptation and mitigation financing would need to increase many-fold. There is sufficient global capital to close the global investment gaps but there are barriers to redirect capital to climate action. Enhancing technology innovation systems is key to accelerate the widespread adoption of technologies and practices. Enhancing international cooperation is possible through multiple channels.

14.3.2.3 US National Oceanic and Atmospheric Assoc. (NCEI) Monthly Report October 2024

Key highlights from the latest available Global Climate Report (October 2024), published by the NCEI are presented below and highlight indications of climate change on a global level:

- October 2024 was the second warmest October on record for the globe in NOAA's 175-year record. The October global surface temperature was 1.32°C (2.38°F) above the 20th-century average of 14.0°C (57.2°F). This is 0.05°C (0.09°F) less than the record warm October of 2023. October 2024 marked the 48th consecutive October with global temperatures, at least nominally, above the 20th-century average.
- The global land-only October temperature was the warmest on record at 2.18°C (3.92°F) above average, 0.03°C (0.05°F) warmer than the previous record set in 2023. The ocean-only temperature was second-warmest at 0.94°C (1.69°F) above average.
- The January–October global surface temperature ranked warmest in the 175-year record at 1.28°C (2.30°F) above the 1901-2000 average of 14.1°C (57.4°F). According to NCEI's statistical analysis, it is practically certain that 2024 will rank as the warmest year on record.
- A persistence of drier-than-normal conditions has resulted in 54% of the contiguous U.S. in moderate to extreme drought. Other areas of expansive drier-than-normal October conditions include the eastern Mediterranean, parts of eastern Europe through western Russia and Siberia, southeastern China, southern Africa, and a large part of Australia.
- Drier-than-average conditions also were present across much of South America, where months of below-average rainfall combined with persistent record and near-record temperatures has led to severe drought across large parts of the continent. In contrast, anomalously wet conditions occurred in areas that included western and central Africa, parts of northwestern China and Kazahkstan through the Russian Far East, southwestern Europe, and parts of the U.S. Southwest and Florida.

14.3.2.4 United in Science Report 2024

The United in Science 2024 report, is compiled by the World Meteorological Organisation (WMO), on behalf of the United Nations Secretary-General to bring together the latest climate science related updates from groups of key global partner organisations including WMO, Global Carbon Project (GCP), Intergovernmental Panel on Climate Change (IPCC), United Nations Environment Programme (UNEP), World Health Organization (WHO), the Met Office (United Kingdom, UK), the jointly sponsored WMO/Intergovernmental Oceanographic Commission (IOC) of UNESCO/International Science Council (ISC), and World Climate Research Programme (WCRP). It presents the very latest scientific data and findings related to climate change to inform global policy and action. Key messages in the report include:

State of climate science: the need for urgent and ambitious climate action

- Total global greenhouse gas (GHG) emissions increased by 1.2% from 2021 to 2022, setting a record of 57.4 billion tons of carbon dioxide equivalent.
- The year 2023 was the warmest on record by a large margin, and during the first half of 2024 the world has experienced exceptionally high global temperatures and many extreme weather events with devastating impacts to society.
- If current mitigation policies are continued, it is estimated (with 66% probability) that global warming will be kept to a maximum of 3 °C throughout the century

Artificial intelligence and machine learning: revolutionizing weather forecasting

- Artificial intelligence (AI) and machine learning (ML) can make skillful weather modelling faster, cheaper and more accessible, enabling a paradigm shift in predicting extreme and hazardous weather events.
- Gaps in data availability, inadequate model resolution and concerns about ethics, such as insufficient transparency and unequal access, are challenges that limit the application of AI/ML for weather forecasting.
- Scientific advancements, capacity development and global collaboration can unlock the full potential of AI/ML in supporting climate change adaptation, disaster risk reduction and sustainable development while bridging global technological disparities.

Space-based Earth observations: enhancing weather, climate, water and related environmental applications

- High-resolution and high-frequency observations of the Earth system are crucial for effective weather forecasting, climate prediction and environmental monitoring.
- Leveraging public–private partnerships, innovations in space-based Earth observations such as very-high resolution imaging and mega-constellations can open new frontiers and accelerate progress towards global goals.
- International collaboration, comprehensive governance frameworks and innovative financing models can support space-based Earth observation for weather, climate, water and related environmental applications.

Bridging virtual and physical realms: leveraging immersive technologies for water and land management

- Socioeconomic impacts and climate change are straining water and land resources, threatening food and water security and highlighting the need for integrated water and land management to support sustainable development and climate action.
- Immersive technologies such as digital twins, virtual reality and the metaverse can revolutionize land and water management by offering immersive, interactive and data-driven solutions that bridge the physical and digital worlds to enhance decision-making and the engagement of diverse actors.
- International cooperation, knowledge sharing and robust multilateral frameworks are crucial for adopting these innovative solutions to better manage land and water resources and ensure a sustainable and equitable future.

Towards pathways to sustainable futures: the role of transdisciplinary approaches to weather, climate, water and related environmental and social sciences

- Global challenges such as climate change, disaster risk reduction and sustainable development cannot be addressed by one form of knowledge alone – they require a transdisciplinary approach that unites actors across environmental, social and cultural contexts to co-create and implement solutions.
- When used appropriately, transdisciplinary approaches have the potential to boost the impact of perspectives offered by weather, climate, water and related environmental and social sciences by enabling diverse perspectives, knowledge and solutions.
- Enhanced philosophies of transdisciplinarity, including education and training, should be embraced and encouraged to prepare the next generation to address the challenges of the future.

A future where everyone is protected by life-saving early warning systems

- Countries with limited to moderate multi-hazard early warning system (MHEWS) coverage have a disaster-related mortality ratio nearly six times higher than those with substantial to comprehensive coverage.
- Innovation in science, technology and tools such as artificial intelligence (AI), multi-channel and digital communication platforms, and citizen science enable game-changing advancements to support the Early Warnings for All (EW4All) initiative.
- Leveraging innovation across the natural and social sciences, alongside robust partnerships, adequate resources and enhanced capacities can help achieve EW4All and safeguard sustainable development gains.

14.3.3 Sensitivity of the Receiving Local and National Climate

14.3.3.1 Local Climate Historic Weather Data

There are a total of 25 synoptic stations located throughout Ireland. These stations are operated by Met Éireann. The parameters measured and recorded at these stations include rainfall, temperature, wind speed and direction, relative humidity, solar radiation, clouds, atmospheric pressure, sunshine hours, evaporation, and visibility. The nearest synoptic station to the proposed development site is located at Birr, which is approximately 42km to the north and Kilkenny which is 38km east of the proposed development. The World Meteorological Organization (WMO) established that the length of the reference period for climate averaged data should be 30 years, with a recommendation to update the climate averages every 10 years to provide representative reference values for recent climatic conditions. The nearest 30 year average datasets are between 1991 and 2020 and is available from Shannon Airport, located approximately 75km to the west of the proposed development. The average monthly precipitation, rainfall, and wind speeds for the 30-year period between 1991 and 2020 are summarised in Table 14-6.

14.3.3.2 Current GHG Emissions Ireland

The latest emissions data is available from the EPA (EPA Latest Emissions Data, July 2024) and is summarised as follows:

- In 2023, Ireland's GHG emissions are estimated to be 55.01 million tonnes carbon dioxide equivalent (Mt CO_2eq), which is 6.8% lower (or 4.00 Mt CO_2 eq) than emissions in 2022 (59.00 Mt CO_2 eq) and follows a 2.0% decrease in emissions reported for 2022. Emissions are 1.2% below the historical 1990 baseline for the first time in 33 years;
- Decreased emissions in 2023 compared to 2022 were observed in the largest sectors except for transport which showed an increase of 0.3%;
- Emissions per capita decreased from 11.4 tonnes CO_2eq/person in 2022 to 10.4 tonnes CO_2eq/person in 2023. Ireland's average tonnes of GHG/capita over the last ten years were 12.1 tonnes. With recent CSO preliminary 2023 census data showing a population of 5.28 million people and with population projected to increase to 5.5 million in 2030, 5.9 million in 2040 and 6.2 million by 2050, per capita emissions need to reduce significantly. At current per capita emission levels, each addition 500,000 people would contribute an additional 5 million tonnes of CO_2eq annually

Table 14-6: Shannon Airport 1991-2020 Averages

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TEMPERATURE (degrees Celsius)													
mean temperature	6.1	6.3	7.5	9.6	12	14.5	16	15.8	14.1	11.2	8.3	6.4	10.7
SUNSHINE (hours)													
mean daily duration	1.7	2.4	3.6	5.4	5.9	5.5	4.4	4.6	3.9	3	2.1	1.5	3.7
RAINFALL (mm)													
mean monthly total	103.8	86.7	75.8	62.3	63.1	69.6	75.8	87.6	77.4	95.5	106.6	115.4	1019.7
greatest daily total	38.2	33.8	34.8	40.2	25.0	45.3	39.5	51.0	52.3	36.9	29.4	33.5	52.3
WIND (knots)													
mean monthly speed	10	10.1	9.6	9.2	9	8.5	8.4	8.3	8.4	8.9	9.1	9.7	9.1
max. gust	75	86	63	66	52	51	52	61	58	66	69	83	86
WEATHER (mean no. of days with..)													
snow or sleet	1.5	1.8	1.2	0.3	0	0	0	0	0	0	0.1	1	5.9
hail	3.1	3.4	2.8	2	0.7	0	0	0.1	0.1	0.5	1	2.3	16
thunder	0.9	0.4	0.3	0.3	0.5	0.4	0.7	0.5	0.2	0.3	0.3	0.4	5.2

Latest assessment of compliance

The provisional greenhouse gas emission inventory for 2023 is the third of ten years over which compliance with targets set in the European Union's Effort Sharing Regulation (EU 2018/842) will be assessed. This Regulation sets 2030 targets for emissions outside of the Emissions Trading Scheme (known as ESR emissions) and annual binding national limits for the period 2021-2030. Ireland's target is to reduce it's greenhouse gas emissions by at least 42% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. The ESR includes the sectors outside the scope of the EU Emissions Trading System (ETS) (such as Agriculture, Transport, Residential, Public Services and Commercial Services and Waste).

Ireland's ESR emissions annual limit for 2023 is 40.52 Mt CO_2eq. Ireland's provisional 2023 greenhouse gas ESR emissions are 42.79 Mt CO_2eq, this is 2.27 Mt CO_2eq more than the annual limit for 2023. This value is the national total emissions less emissions generated by stationary combustion i.e. power plants, cement plants, and domestic aviation operations that are within the EU's emissions trading scheme. .Cumulatively from 2021-2023 and after using the ETS flexibility, Ireland is in compliance with the ESR by a net distance to target of 0.15 Mt CO^2eq, although in 2023 there is an exceedance of 0.36 Mt CO^2eq above its Annual Emissions Allocation with the ETS flexibility. Agriculture and Transport accounted for 76.0% of total ESR emissions in 2023. The revised LULUCF Regulation (2023) incorporates new rules around LULUCF flexibilities for the period 2021-2025 and 2026-2030. There is a high degree of uncertainty relating to the availability of the LULUCF flexibility and, if available, the quantity of flexibility in each budgetary period.

The latest projections (May 2024) indicate that currently implemented measures (With Existing Measures) will achieve a reduction of 9% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the higher ambition (With Additional Measures) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 25% by 2030, still short of the 42% reduction target.

In terms of the 2030 targets, the ESR provides two flexibilities (use of ETS allowances and credit from action undertaken in the land use, land use change and forestry (LULUCF) sector) to allow for a fair and cost-efficient achievement of the targets. New Regulations in 2023 mean there are new rules around LULUCF flexibility that incorporates split budgets 2021-2025 to 2026-2030. Additional analyses are needed to estimate the impact of the new rules on flexibilities. In the interim, based on latest LULUCF inventory and projections data, the maximum amount of LULUCF flexibility now projected to be available is 13.4 Mt CO^2eq in the first 5-year period (or 2.68 Mt CO^2 eq per annum), with no flexibility available in the second 5-year period.

Ireland's greenhouse gas (GHG) emissions increased in the period from 1990 to 2001 where it peaked at 70.82 Mt CO_2 equivalent, before displaying a downward trend to 2014. Emissions increased by 4.0% and 3.8%, respectively in the years, 2015 and 2016 and remained relatively stable in 2017 and 2018, followed by a 3.0% decrease in 2019. In 2020 total national GHG emissions were 3.6% lower than 2019 emissions largely driven by the covid restrictions. The gradual lifting of covid restrictions in 2021 along with an increase in the use of coal and less renewables within electricity generation resulted in a 4.5% increase in emissions in 2021 compared to 2020. A 2.0% decrease in emissions was seen in 2022 compared to 2021, mainly due to a substantial decrease in residential sector emissions combined with decreases from industry, agriculture and electricity generation. this was followed by a 6.8% reduction in emissions in 2023.

Ireland's GHG emissions have decreased by 1.2% from 1990-2023.

In relation to the greenhouse gases; carbon dioxide (CO_2) accounted for 61.0% of the total, with methane (CH_4) and nitrous oxide (N_2O) contributing 28.9% and 8.8% as CO_2 equivalent, respectively and F-gases contributing 1.3% of the total as CO_2 equivalent.

In 2023, the energy industries, transport and agriculture sectors accounted for 73.5% of total GHG emissions. Agriculture is the single largest contributor to the overall emissions, at 37.8%. Transport, energy industries and the residential sector are the next largest contributors, at 21.4%, 14.3% and 9.7%, respectively.

14.3.3.3 Climate Change Trends in Ireland

Changes in Ireland's climate are in line with global trends including increasing temperatures, changes in precipitation patterns, and changes in the variability and intensity of storms. This has resulted in flooding events, sea level rise and sea surging events.

The main observed and projected in Irelands climate parameters (National Adaption Framework, 2024) are summarised in Table 14-7 and Table 14-8:

Representative Concentration Pathways (RCPs), referenced in Table 14-8, refer to various scenarios that describe different 21st century pathways of GHG emissions and atmospheric concentrations, air pollutant emissions and land use.

TII's Guidance document PE-ENV-01104 (TII, 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

Table 14-7: Observed Climate Change Trends in Ireland

Parameter	Observed
Temperature	• Ireland's temperature has varied in line with global trends with annual average surface air temperature increasing 1.01°C over the last 120 years and 0.7°C when comparing the period 1991-2020 to 1961-1990. The frequency of warm years has increased from the late 1980s to present – with fifteen of the top 20 warmest years on record occurring since 1990.
Precipitation	• Increased annual precipitation of 7% has been recorded between the period 1991-2020 compared to 1961-1990. The decade 2011-2020 has been the wettest on record. Evidence suggests a trend towards increased winter rainfall and decreased summer rainfall.
Wind Speed and Storms	• Increasing wave heights over the last 70 years in the North Atlantic with winter season trends of increases up to 20 cm per decade, along with a northward displacement of storm tracks.
Sea Level and Sea Surface Temperature	• Satellite observations indicate the sea level around the coast of Ireland has increased by approximately 2-3mm per year since the 1990s • Average sea temperature has risen with measurements at Malin Head showing an increase in average sea temperatures of 0.47°C over the last 10 years when compared to the period 1981-2010. Ocean acidity has also increased between 1991 and 2013.

Table 14-8: Projected Changes in Irelands Climate

Parameter	Projected Change
Temperature	• Ireland's climate is projected to warm incrementally across all future scenarios. Mid-century (2041-2070) annual mean temperatures are projected to increase by 1.08°C (o.59 to 1.72°C – 1oth and 90th percentiles) for RCP4.5 and 1.52°C (1.14 to 1.93°C) for RCP8.5. End of century (2071-2100) annual mean temperatures show increases of 1.48°C (1.05 to 2.19°C) under RCP 4.5 and 2.71° (1.96 to 3.34°C) under RCP8.5.

Parameter	Projected Change
	• The number of days when daily maximum temperature is >25ºC) are projected to increase. By mid-century, RCP4.5 projects an increase of 2.97 (0.86 to 5.34) more summer days, while RCP8.5 shows an increase of 4.74 (2.46 to 6.70) more summer days. By end of century, larger increases of 4.08 (1.36 to 6.47) and 11.03 (6.48 to 16.83) are evident for RCP4.5 and 8.5 respectively. • In a national context, the average number of frost days (days when the minimum temperature is below 0ºC) are projected to decrease by 16.18 (-22.09 to-8.84) days by mid-century for RCP4.5 and by 21.75 (-27.75 to-15.50) under RCP8.5. The end of century period sees a larger decrease in frost days, with a reduction of 21.10 (-27.20 to-14.99) and 31.42 (-36.95 to-24.71) under RCP4.5 and 8.5 respectively in comparison to the baseline. • The number of icing days (days when maximum temperature is lower than 0º=C) is projected to decrease.-0.24 (-.36 to-0.10) days change from the baseline for RCP4.5 by mid-century, and-0.30 (-0.36 to-0.20) in RCP 8.5. For end of century, the change from the baseline goes to-0.30 (-0.36 to-0.19)-0.36 (-0.37 to-0.33) days for RCP4.5 and 8.5 respectively.
Precipitation	• Precipitation projections are more variable than temperature variables. Projected changes in summer precipitation by mid-century-1.79% (-12.54 to 8.68%) and 5.51% (-15.62% to 4.85%) for RCP4.5 and 8.5 respectively. End of century projections indicate changes of-1.97% (-12.86 to 6.82%) of precipitation for RCP4.5 and-7.28% (-2.76 to 6.57%) for RCP8.5 during the summer months. On an annual basis, end of century projections under RCP4.5 indicate changes in precipitation of 5.04% (0.3 to 9.87%) in reference to the baseline and 8.92% (1.21 to 15.96%) for RCP8.5 • Projections for heavy precipitation events are expected to increase annually with the number of days above 20mm increasing by 1.15 (0.06 to 2.44) days by mid-century for RCP4.5 and 1.69 (0.62 to 2.87) under RCP8.5.
Wind Speed and Storms	• Mean 10-m wind speeds are project to decrease for all seasons by mid-century. The decreases are largest for summer months under the very high GHG emissions scenario (RCP8.5). The summer reductions in 10-m wind speed range from 0.3% to 3.4% for the intermediate GHG emissions scenario (RCP4.5) and from 2% to 5.4% for the very high GHG emissions scenario (RCP8.5).
Sea Level and Sea Surface Temperature	• Projections of sea level rise varies substantially around the coast of Ireland. Areas of the extreme southwest are likely to experience the largest increases in sea level at a rate of 3.3-4.8 mm per year and areas of the northeast coast are likely to experience sea level rise at a rate of 2.2-3.7 mm per year. Due to a limited understanding of some of the important effects driving sea level rise to a best estimate of future upper bound for sea level rise cannot be provided with confidence. • The seas around Ireland are project to continue to warm. Projected changes for the Irish Sea indicate a warming for all seasons with the highest in Autumn and lowest in Spring. Due to a limited number of climate model projections, projected changes remain uncertain.

14.3.3.4 National Extreme Weather Events

The World Meteorological Organization (WMO) established that the length of the reference period should be 30 years, with a recommendation to update the climate averages every 10 years to provide representative reference values for recent climatic conditions.

A review of extreme weather events over the period 1994 to 2024 has been undertaken using published Met Éireann data[4] and has been summarised below:

Table 14-9: Major Weather Events 1994 -2024

Extreme weather events	Date	Description
Coastal Storms	24th December 1997:	Windstorm.
	Dec 2013 – Feb 2014	Storms (12 diff days)
	16th Oct 2017	Storm Ophelia RED level Wind Warning.
	21st Oct 2017	Storm BRIAN: Wind
	2nd Jan 2018	Storm ELEANOR: Wind: Coastal Damage
	19th and 20th Aug 2020	Storm Ellen
	7th Dec 2021	Storm Barra
	18th Feb 2022	Storm Eunice
Extreme heat/drought	Summer 1995	Warmest weather since 1955
	Summer 2006	Warmest, driest sunniest summer since 1995
	Summer 2018	High temperatures and drought conditions.
	18th/19th November 2009	119mm 1-day recorded Cloon Lake.
	4th, 5th December 2015	Code RED Rainfall event.
	4th Dec 2015 – 13th Jan 2016	Rainfall/ground saturation.
	July 2022	Highest Temperature Recorded in Ireland since 1887
	Annual 2023	2023 confirmed as Ireland's warmest year on record.
Freezing conditions	Winter 2009/2010: Dec,Jan,Feb:	Coldest winter 13/18 years
	28th Nov/13th Dec 2010:	Extreme cold/ice event/snow event
Heavy rainfall	Dec 2009/Jan 2010	Snow and ICE
	Dec 2010	Heavy Snow falls.
	January 2013	Heavy Snow
	December 2013	Heavy Snow
	24th Feb to 4th Mar 2018	Storm Emma Snow (RED) Warning

[4] Met Éireann, n.d. Major Weather Events. Online: Available at: < https://www.met.ie/climate/major-weather-events >. Accessed: November 2024

Extreme weather events	Date	Description
	Annual 2023	2023 confirmed as Ireland's wettest year on record.
Pluvial flooding	May 2015	Flooding at Clievrag, Listowel
	4th, 5th December 2015	Code RED Rainfall event.
	Sept 2015	Flooding Clievragh, Listowel
	22nd Nov 2017	Flooding Ballyduff, Ballyheigue, Causeway
Storm force winds/windstorms	24th Dec 1997	Windstorm
	Dec 2013-Feb 2014	Winter Storms (12 diff days)
	12th Feb 2014	Storm Darwin "RED"
	16th Oct 2017	Ex Hurricane Orphelia RED level Wind warning
	19th and 20th Aug 2020	Storm Ellen – Status Red Wind Warning
	7th Dec 2021	Storm Barra
	18th Feb 2022	Storm Eunice
	21st Jan 2024	Storm Isha

14.4 Likely Significant Effects of the Proposed Development

14.4.1 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 2024 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 a **negative**, **slight** to **moderate,** and **long term** effect should the proposed development not proceed, as emissions associated with the burning of fossil fuels will continue.

Table 14-10: Do Nothing Assessment of Air Quality and Climate Effects

Do Nothing Assessment of Air Quality and Climate Effects						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Do Nothing Scenario	Negative	Slight to Moderate	Extensive	Long-Term	Indirect	Likely

14.4.2 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 (PM10).

There will be dust generated from excavation, 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.

14.4.2.1 Air Quality – Dust Emissions

In terms of air quality, the greatest likelihood of effects during the construction stage will be from dust emissions associated with the construction works. The key works likely to be associated with dust emissions include earthworks and excavation activities, construction of hardstanding areas and movement of vehicles on and off site. Dust emissions during the decommissioning phase will be lower than the construction phase given that there is no requirement for excavations, refer to Section 14.4.4.

Earthworks

Earthworks will primarily involve excavation, haulage, tipping, landscaping and stockpiling. The dust emission magnitude from earthworks, as per IAQM guidance can be classified as small, medium or large and are described as follows:

- Large: Total site area > 10,000m^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 > 8m in height, total material moved >100,000 tonnes;
- Medium: Total site area 2,500m^2 – 10,000m^2, moderately dusty soil type (e.g silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4-8m in height, total material moved 20,000 – 100,000 tonnes; and
- Small: Total site area >2,500m^2, soil type with large grain size (e.g. sand), < heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <20,000 tonnes, earthworks during wetter months.

Combining the magnitude of works with the previously established sensitivity of the area, refer to Section 14.3.1.2, the potential risk of dust impacts as a result of earthworks can be determined with use of the IAQM guidance risk rating matrix, refer to 14-11.

The dust magnitude for the proposed earthwork activities can be classified as Large, as the total area of site works is over 10,000m^2 for the Wind Farm area and the potential magnitude of impact according to IAQM guidance (IAQM 2024) is Medium for the grid connection works, given that the total site area for works will be between 2,500m^2 and 10,000m^2.

With respect to the IAQM guidance criteria table for rating of risk, refer to Figure 14-11, the risk of dust impacts as a result of the main wind farm earthworks prior to mitigation is Low with respect to dust soiling, human health and ecological impacts, refer to Figure 14-12.

With respect to the IAQM guidance criteria table for rating of risk, refer to Figure 14-11, the risk of dust impacts as a result of the grid connection works prior to mitigation is Medium with respect to dust soiling and human health. The risk of dust impacts from grid connection works to ecological receptors is considered Low, refer to Figure 14-13.

Table 14-11: Criteria for Rating Risk of Dust Impacts – Earthworks

Receptor Sensitivity	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 14-12: Risk of Dust Effects – Main Wind Farm Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Effects
Dust Soiling	Low	Large	Low Risk
Human Health	Low		Low Risk
Ecological	Low		Low Risk

Table 14-13: Risk of Dust Effects -Grid Connection Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Effects
Dust Soiling	Medium	Medium	Medium Risk
Human Health	Medium		Medium Risk
Ecological	Low		Low Risk

Construction

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

- Large: Total building volume >100,000m^3, on-site concrete batching, sandblasting;
- Medium: Total building volume 25,000m^3-100,000m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching; and,
- Small: Total building volume <25,0000m^3, construction material with low likelihood of dust release (e.g. metal cladding or timber).

Combining the magnitude of works with the previously established sensitivity of the area, refer to Section 14.3.1.2, the potential risk of dust impacts as a result of construction can be determined with use of the IAQM guidance risk rating matrix, refer to 14-14.

The dust emission magnitude for the main wind farm construction activities can be classified as **Large** given that the volume of material exceeds 100,000m^3 and is **Small** for the grid connection, given that construction volumes will be below 25,000m^3.

With respect to the IAQM guidance criteria table for rating of risk, refer to **Table 14-14**, the risk of dust impacts as a result of the main wind farm construction works prior to mitigation is **Low** with respect to dust soiling, human health and ecological impacts, refer to **Table 14-15.**

With respect to the IAQM guidance criteria table for rating of risk, refer to **Table 14-14,** the risk of dust impacts as a result of the grid connection works prior to mitigation is **Low** with respect to dust soiling and human health. With respect to ecological impacts, dust impacts from grid connection construction is considered **Negligible**, refer to **Table 14-16.**

Table 14-14: Criteria for Rating of Dust Effects – Construction

Receptor Sensitivity	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 14-15: Risk of Dust Effects – Main Wind Farm Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust Related Effects
Dust Soiling	Low	Large	Low Risk
Human Health	Low		Low Risk
Ecological	Low		Low Risk

Table 14-16: Risk of Dust Effects – Grid Connection Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust Related Effects
Dust Soiling	Medium	Small	Low Risk
Human Health	Medium		Low Risk
Ecological	Low		Negligible

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, as per IAQM guidance, 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: 10-50 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: <10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

Combining the magnitude of works with the previously established sensitivity of the area, refer to Section 14.3.2, the potential risk of dust impacts as a result of trackout can be determined with use of the IAQM guidance risk rating matrix, refer to Table 14-17.

During construction, the primary source of dust emissions with potential to impact sensitive receptors will be movement of vehicles on and off site. Materials with the highest potential for dust emissions will be concrete and aggregates for the construction of hardstanding areas and access tracks. However, only ready-mix concrete will be used on site and all concrete will be delivered in enclosed trucks which will reduce the potential for dust emissions.

The max amount of daily outward HGV movements for the main wind farm development will be 40 HGVs and therefore trackout activities can be considered of **Medium** magnitude , refer to Chapter 16 Traffic and Transportation of this EIAR. For the grid connection there will be less than 10 outward HGV movements are predicted and therefore trackout activities can be considered to be of **Small** magnitude.

With respect to the IAQM guidance criteria table for rating of risk, refer to Table 14-17, the risk of dust impacts as a result of the main wind farm trackout activities prior to mitigation is **Low** with respect to dust soiling, human health and ecological impacts, refer to Table 14-18.

With respect to the IAQM guidance criteria table for rating of risk, refer to Table 14-17, the risk of dust impacts as a result of the grid connection works prior to mitigation is **Low** with respect to dust soiling and human health, while risk of ecological impacts as a result of dust from grid connection activities is considered **Negligible**, refer to Table 14-19.

Table 14-17: Criteria for Rating of Dust Effects – Trackout

Receptor Sensitivity	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 14-18: Risk of Dust Effects – Main Wind Farm Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Effects
Dust Soiling	Low	Medium	Low Risk
Human Health	Low		Low Risk
Ecological	Low		Low Risk

Table 14-19: Risk of Dust Effects – Grid Connection Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust Related Effects
Dust Soiling	Medium	Small	Low Risk
Human Health	Medium		Low Risk
Ecological	Low		Negligible

Summary of Dust Emission Risk

The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant effects occurring.

The pre-mitigation Dust Risk Summary Table for the Wind Farm construction phase is shown in Table 14-20. The Dust Risk Summary Table for the main grid connection construction phase is shown in Table 14-21

Overall, to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, a range of dust mitigation measures associated with high risk of dust effects must be implemented. When the dust mitigation measures detailed in the mitigation section of this chapter in Section 14.5.1 are implemented, fugitive emissions of dust from the site will be insignificant and pose minimal nuisance at nearby receptors.

Table 14-20: Summary of Main Wind Farm Construction Phase Dust Effect Risk Used to Define Site Specific Mitigation

Potential Effect	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Low Risk	Low Risk
Human Health	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	Low Risk	Low Risk

Table 14-21: Summary of Grid Connection Construction Phase Dust Effect Risk Used to Define Site Specific Mitigation

Potential Effect	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	NA	Medium Risk	Low Risk	Low Risk
Human Health	NA	Medium Risk	Low Risk	Low Risk
Ecological	NA	Low Risk	Negligible	Negligible

Table 14-22 shows the significance of main wind farm construction phase dust effects in relation to dust soiling, human health and ecological receptors. Table 14-23 shows the significance of grid connection construction phase dust effects in relation to 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, slight to moderate, temporary to short-term and direct on dust sensitive receptors.

Table 14-22: Construction Effect 1 Main Wind Farm Dust Emissions on Sensitive Receptors

Construction Effect 1: Main Wind Farm Dust emissions on Sensitive Receptors						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Dust Soiling	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely
Human Health	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely
Ecological	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely

Table 14-23: Construction Effect 2 Grid Connection Dust Emissions on Sensitive Receptors

Construction Effect 2: Grid Connection Dust emissions on Sensitive Receptors						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Dust Soiling	Negative	Slight to Moderate	Local	Temporary to Short-Term	Direct	Likely
Human Health	Negative	Slight to Moderate	Local	Temporary to Short-Term	Direct	Likely
Ecological	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely

14.4.2.2 Vehicle Emissions

Traffic levels, summarised in Chapter 16 Traffic and Transportation of this EIAR, during the construction phase are below the TII criteria (refer to Section 14.2.2.1) and therefore a detailed quantitative assessment of construction traffic was not required.

Exhaust emissions from construction and delivery vehicles during the construction period of 18 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.

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

Table 14-24: Construction Effect 3: Traffic Emissions on Air Quality

Construction Effect 3: Traffic Emissions on Air Quality						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Pre - Mitigation	Negative	Imperceptible	Local	Short-Term	Direct	Likely

14.4.3 Operational Phase

During the operational phase, there will be no significant negative impacts on air quality from dust and traffic emissions given the only activity of site will consist of occasional maintenance. The level of traffic will be insignificant and below criteria outlined in Section 14.2.2.1, and therefore a detailed air quality assessment was not required. The following sections assess how the proposed development effects the climate.

14.4.3.1 Compatibility with Climate Policy and Targets

In terms of local policy, the 2022-2028 Tipperary County Development Plan states that Tipperary County Council will facilitate the development of energy sources which will achieve low carbon outputs.

In recognition of the need to limit global temperatures, the Paris Agreement came into existence in 2015. It follows on from the Kyoto Protocol with the intention of accelerating progress towards decarbonisation, climate resilient and sustainable societies. The primary aim of the Paris Agreement is to limit global temperature rise to well below 2 degrees Celsius.

To align with the goals of the Paris Agreement, one of the main aims of the Climate Action Plan 2024 is for 80% of electricity in Ireland to come from renewable resources by 2030.

The proposed development is aligned with current energy and climate policy, aims and objectives, which primarily seek to increase the production of electricity from renewable sources. The proposed development, along with other renewable electricity generating projects across the country will help contribute to the 80% renewable electricity target.

14.4.3.2 2024 Climate Action Plan

The current national Climate Action Plan (2024) sets out a detailed sectoral roadmap designed to deliver a 51% reduction in greenhouse gas (GHG) emissions by 2030. The GHG reduction target will require significant reductions from all sectors including the renewable energy sector. By its very nature, the proposed development will contribute to achieving this target and move Ireland one step closer towards decarbonisation and ultimately a net zero GHG emissions society.

The proposed development is fully compatible with the provisions relating to renewable energy set out in the CAP, summarised as follows:

- The project will contribute to the CAPs objectives to achieve a 51% reduction in Ireland’s overall GHG emissions from 2021 to 2030, and to achieving net-zero emissions no later than 2050;.
- The project will contribute to the CAPs objectives to decarbonise the electricity sector by taking advantage of our significant renewable energy resources;
- The project will contribute to the CAPs objectives to increase the share of electricity demand generated from renewable sources to 80%; and
- The project will contribute to the objectives of the CAP to expand and reinforce the grid through the addition of a substation and associated gridlines.

The project will lead to a reduction in greenhouse gas emissions by using a least cost technology recognised in the CAP. Depending on the final turbine to be selected at the procurement stage, prior to construction, the proposed development is expected to have a capacity of between 5.7MW and 6.6MW. This would provide between 149,796MWh and 173,448MWh of renewable electricity per year, enough to power approx. 35,665 to 41,297 no. Irish homes, based on average electricity use per home of 4,200 kWh annually (According to data from the Commission for Regulation of Utilities).

14.4.3.3 Carbon Savings and Losses from the Wind Farm

Once operational, the electricity generated by the wind farm will displace electricity that would otherwise have been produced by burning fossil fuels. This will also displace the associated greenhouse gas emissions. However, there will be some carbon losses due to the manufacturing process of the wind turbines.

In order to demonstrate that the carbon savings will significantly outweigh any potential carbon losses, a methodology made available by the Scottish Government in an excel worksheet titled '*Calculating carbon savings from wind farms on Scottish peatlands*' was applied to this development.

As discussed earlier, this is an established methodology which has been approved by the Scottish government and Scottish Environmental Protection Agency (EPA). Submissions made by developers using this tool are regularly audited by the Scottish EPA. In the absence of an Irish equivalent, it is considered appropriate to use this tool for the proposed development.

Clear felling of forestry and hedgerows is required to facilitate accommodation works, turbine access tracks, hardstandings and the on-site substation. The carbon losses over the lifetime of the development are calculated from the area to be felled and the average carbon that would have been sequestered annually. The tool provides an option for calculation of tree removal carbon however does not include hedgerow removal. For the purposes of this assessment, a conservative approach will be taken and the area of hedgerow to be removed is input as a felled forestry area. The total felled area requiring planting is therefore taken as 4.13 ha. Any felled forestry and hedgerows will be replanted resulting in no overall net loss.

Removal of peat from site will be minimal. There was no peat mapped on the GSI maps for the site. During a site walkover a small area of peaty type soil was noted in the north-eastern corner of the site. Site investigations found small patched of peat less than 0.5m deep at the substation site, and at Turbine location 3.

The precise turbine models have not yet been determined and An Bord Pleanála have confirmed that it is satisfied the application can be made for three turbine options with differing blade lengths, hub heights and rated power.

The theoretical worst case carbon losses due to the proposed development for each of the three turbine options are presented in Table 14-25 to Table 14-27.

Table 14-25: CO^2 Losses due to the Proposed Development (A(1) Turbine Option)

Source	CO_2 Losses (tonnes CO_2 equivalent)
Losses due to turbine life (e.g. manufacture, construction & decommissioning)	48,582
Losses due to reduced carbon fixing potential	37
Losses from soil organic matter	1,681
Losses due to DOC & POC leaching	76
Losses due to felling forestry	1,908
Total	**52,286**

Table 14-26: CO^2 Losses due to the Proposed Development (A(2) Turbine Option)

Source	CO_2 Losses (tonnes CO_2 equivalent)
Losses due to turbine life (e.g manufacture, construction & decommissioning)	51,386
Losses due to reduced carbon fixing potential	37
Losses from soil organic matter	1,681
Losses due to DOC & POC leaching	76
Losses due to felling forestry	1,908
Total	**55,089**

Table 14-27: CO^2 Losses due to the Proposed Development (A(3) Turbine Option)

Source	CO_2 Losses (tonnes CO_2 equivalent)
Losses due to turbine life (e.g manufacture, construction & decommissioning)	56,992
Losses due to reduced carbon fixing potential	37
Losses from soil organic matter	1681
Losses due to DOC & POC leaching	76
Losses due to felling forestry	1,908
Total	**60,095**

The turbine option with the most CO_2 losses during construction are the 6.6MW turbines, refer to Table 14-28. The calculations show 60,095 of CO_2 equivalent losses over the 35-year life span for the 6.6MW turbines. 56,992 tonnes CO_2 equivalent or 95% of the losses come from the turbine life cycle. The early felling of the forestry accounts for 1,908 tonnes CO_2 equivalent losses or 3% of the total.

The calculation spreadsheet uses counterfactual emission factors to calculate the payback period. There is no clear guidance on the appropriate emission factors to use in Ireland. A grid mix emission factor of 0.375 t CO_2 MWh-1 sourced from the SEAI document '*Energy Related CO^2 emissions in Ireland 2005 to 2018*' was used as the counterfactual emission factor. This resulted in a payback time of 0.9 years for each turbine option (Refer to Volume III, Appendix 14B). Therefore, for the remaining 34.1 years of operation the proposed development will be directly responsible for significant carbon saving. The wind farm will save approximately 56,174 tonnes CO_2 (based on a 5.7MW turbine wind farm providing

149,796MWh of annual renewable electricity) to 65,043 tonnes CO_2 (based on a 6.6MW turbine wind farm providing 173,448MWh of annual renewable electricity) per year.

Once operational, there will be no direct emissions to the atmosphere from the development, except for vehicles which will periodically visit the proposed development site for maintenance however emissions associated with this low level of vehicles are considered insignificant. The carbon calculations demonstrate that significant CO_2 will be offset by the proposed development and will further assist Irelands CO_2 reduction commitments under the Paris Agreement and Ireland's Climate Action Plan 2024. The electricity generated will assist to displace electricity otherwise generated from coal, oil and gas fired power plants, thus reducing emissions from these power plants.

In the context of the proposed project, there will be a long-term, moderate, positive effect.

Table 14-28: Operational Phase Effect 1 Carbon Savings

Operational Effect 1: Carbon Savings						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Whole Wind Farm Development	Positive	Moderate	National	Long-Term	Indirect	Likely

14.4.4 Decommissioning Phase

The scale of works involved during the decommissioning phase will primarily involve the dismantling and removal of the wind farm infrastructure off-site and the dust generating activities will be greatly reduced when compared to the construction phase. Similarly, emissions from plant and machinery exhausts will be lower than anticipated for the construction phase. Where possible materials will be recovered and recycled, minimizing the energy required for disposal.

Dust emission magnitudes from demolition/decommissioning works, as per IAQM guidance, can be classified as small, medium or large and have been described as follows:

- Large: Total building volume >50,000m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20m above ground level;
- Medium: Total building volume 20,000m^3 – 50,000m^3, potentially dusty construction material, demolition activities 10-20m above ground level; and
- Small: Total building volume <20.000m^3, construction material with low volume for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Combining the magnitude of works with the previously established sensitivity of the area, refer to Section 14.3.1.2, the potential risk of dust impacts as a result of decommissioning works can be determined with use of the IAQM guidance risk rating matrix, refer to Table 14-29

No demolition works are required for the grid connection during the decommissioning phase, however wind turbines will be decommissioned and dismantled after the turbines' operational life period.

The dismantling and removal of wind turbines is a specialist operation, which will be undertaken by the turbine supplier that completed the installation where possible. Turbine dismantling will be undertaken in reverse order to methodology employed during their construction.

On the dismantling of turbines, it is not intended to remove the concrete foundation from the ground. It is considered that foundation removal would be the least preferred option in terms of effects to the environment. The turbine foundations will therefore be backfilled and covered with soil material. As there is no usable soil or overburden material on the site after construction, this material will be sourced locally and imported to site on heavy good vehicles. The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation.

The exact details of the decommissioning phase will be detailed as part of a Decommissioning Plan which will be finalised with the local authority prior to decommissioning. Taking a conservative approach, the demolition phase dust magnitude is taken as Large for the purposes of this assessment.

With respect to the IAQM guidance criteria table for rating of risk, refer to Table 14-29, the risk of dust impacts as a result of the main wind farm decommissioning works prior to mitigation is Low with respect to dust soiling, human health and ecological impacts, refer to Table 14-30.

Table 14-29: Criteria for Rating Risk of Dust Effects – Decommissioning

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium Risk	Low Risk
Medium	Medium	Medium Risk	Low Risk
Low	Low	Low Risk	Negligible

Table 14-30: Risk of Dust Effects – Decommissioning

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Effects
Dust Soiling	Low	Large	Low Risk
Human Health	Low		Low Risk
Ecological	Low		Low Risk

As is the case with the construction stage, the exhaust emissions from decommissioning vehicles 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.

The risk rating of dust impacts from decommissioning is rated as low and therefore in the absence of mitigation, dust effects from the proposed development construction phase works are predicted to be negative, slight, temporary to short-term and direct on dust sensitive receptors.

Table 14-31: Decommissioning Effect 1: Dust Emissions on Sensitive Receptors

Decommissioning Effect 1: Dust emissions on Sensitive Receptors						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Dust Soiling	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely
Human Health	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely
Ecological	Negative	Slight	Local	Temporary to Short-Term	Direct	Likely

14.5 Mitigation Measures

There is the potential for a number of impacts to air quality and climate during the construction and operational phases of the proposed development. To avoid any potential significant impacts the following mitigation measures have been proposed.

14.5.1 Construction Phase

14.5.1.1 Dust Generation

Construction phase generated dust will be minimised by the following measures that will be implemented in full and which are also incorporated into the site-specific CEMP (Volume III, Appendix 2B):

- Water will be used as a dust suppressant where required e.g. a water bowser to spray access tracks and crane hardstanding areas during any extended dry periods when fugitive dust emissions could potentially arise;
- Public roads will be inspected regularly for cleanliness and cleaned as necessary;
- All loads entering and leaving the site will be covered during dry periods, to protect from dust;
- Vehicle speeds will be controlled when passing over access tracks and crane hardstanding areas within the site;
- Wheel wash facilities will be implemented at the site entrance from the public road to facilitate removal of any material collected by vehicles entering or leaving the site and preventing its deposition on public roads;
- Site stockpiling of materials will be designed and laid out to minimise exposure to wind; and
- Daily site inspections will take place to examine dust measures and their effectiveness.

14.5.1.2 Construction Traffic Emissions

Construction traffic emissions will be reduced using the following measures that will be implemented in full:

- Ensure regular maintenance of plant and equipment. Carry out periodic technical inspection of vehicles to ensure they perform most efficiently;
- Implementation of the Traffic Management Plan (Volume III, Appendix 16A) to minimise congestion;
- All site vehicles and machinery will be switched off when not in use, and no idling of engines will be permitted;
- The majority of aggregate materials for the construction of the proposed development will be obtained from an on-site borrow pit. This will reduce the number of delivery vehicles to site, thereby reducing emissions associated with vehicle movements.

14.5.2 Operational Phase

It is not expected that any significant adverse effects to climate and air quality will occur during the operational phase, therefore no mitigation measures are required.

14.5.3 Decommissioning Phase

Effects resulting from the decommissioning phase are expected to be similar in nature, however smaller in scale in comparison to the construction phase. A decommissioning plan will be agreed with the planning authority prior to the commencement of decommissioning. This plan will include the following measures:

- Water will be used as a dust suppressant where required e.g. a water bowser to spray access tracks and crane hardstanding areas during any extended dry periods when fugitive dust emissions could potentially arise;
- Public roads will be inspected regularly for cleanliness and cleaned as necessary;
- All loads entering and leaving the site will be covered during dry periods, to protect from dust;
- Vehicle speeds will be controlled when passing over access tracks and crane hardstanding areas within the site; and
- Daily site inspections will take place to examine dust measures and their effectiveness.

Decommissioning traffic emissions will be reduced using the following measures that will be implemented in full:

- 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; and

14.6 Cumulative Effects

Planning applications within 20km of the proposed development site are listed in Section 1.6.4.6 of Chapter 1 of this EIAR. The closest sizable developments to the proposed development include:

- Four multiple housing developments in Thurles:
    - One multi-housing development (86 units) in Thurles was permitted in Feb 2024, another in Feb 2023 (26 units) and a third in Sept 2022 (63 dwellings). One multi-housing planning application in Thurles is still under consideration. These are all located at least 3km south and downstream of the proposed wind farm site.
- One incomplete powerline (Borrisoleigh to Thurles – note there are 2 planning applications for this line):
- One solar farm and substation (Rahelty 5km south east);
- A community health care centre and pharmacy (Thurles); and
- A multifunctional spectator stand for a sports facility with three pitches in Thurles

In addition to the above planning applications permitted, there is two wind farm developments currently under construction, Ballincurry Wind Farm (14.7km from proposed development) and Upperchurch Wind Farm (17.05km from proposed development).

From an air quality point of view, the most likely cumulative effect from another development would arise from construction phase dust emissions. The nearest development of significant scale to the proposed development which is currently under construction is Ballincurry Wind Farm (14.7km from proposed development) and Upperchurch Wind Farm (17.05km from proposed development). Other developments, including housing developments are considered sufficient distance away and are not considered likely to cause cumulative effects to air quality, particularly dust emissions. The resultant cumulative effects on air quality will be imperceptible.

There will be no net CO_2 emissions from the operational phase of the proposed development emissions once the wind farm is operational. There will be emissions from operational and maintenance vehicles, occasionally visiting the site but these effects will be imperceptible. Therefore, there will be no measurable significant negative cumulative effect with other developments.

Should this wind farm and other renewable electricity generation projects become operational, the combined beneficial cumulative effects will be greater than those described in this chapter. The tonnes of CO_2 emissions avoided and the improvement to air quality, especially in our towns and cities, will be greatly enhanced. Therefore, the potential cumulative effect with other renewable energy projects will be long term, significant and positive on air quality and climate as there is no emission to the atmosphere from the proposed development during the operational phase. There will be no cumulative effect on air quality with ongoing forestry operations on site.

Decommissioning Stage

During the decommissioning stage there is potential for cumulative effects should developments in the vicinity of proposed project occur at the same time as decommissioning however as the decommissioning phase is predicted to occur after the operational phase completion (35 years), the nature of these potential future developments is not known.

The scale of works involved during the decommissioning phase will primarily involve the dismantling and removal of the wind farm infrastructure off-site and the dust generating activities will be greatly reduced when compared to the construction phase. Similarly, emissions from plant and machinery exhausts will be lower than those anticipated for the construction phase. Where possible materials will be recovered and recycled, minimising the energy required for disposal.

As there are no significant effects to air and climate predicted during the decommissioning stage, no significant cumulative effects from potential developments in vicinity of development are predicted.

14.7 Risk of Major Accidents and Disasters

Given the temporary nature of the construction stage and the scale of the proposed project, as well as the environmental protection measures that will be implemented from the outset, the risk of disasters (typically considered to be natural catastrophes e.g. very severe weather event) or accidents (e.g. fuel spill, traffic accident, land-slide) is considered low.

Flood risk is considered in EIAR Chapter 9 to determine whether the site is at risk from extreme fluvial flooding events. The turbines have been located to avoid areas prone to flooding. This assessment concluded that the site is not at risk from extreme flooding. The assessment also considered the increased risk of downstream flooding as a result of the proposed development. The assessment considers that forest felling, new site access tracks, turbine hard-standing areas and other new, hard surfaces have the potential to contribute to a low level of increase in surface water run-off. The assessment however determined that the risk of an increase in downstream flooding is low due to the small percentage increase in run-off contributing to the catchments as a result of the wind farm development.

During the operational life of the wind farm, particularly in the context of climate change, potential exists for increased storm events and severe weather. Wind turbines are designed for specific wind parameters and will shut down during high wind speed events. Therefore, the potential effects of climate change on the operational development may involve curtailment where the turbines will be restricted from operation due to severe winds, however this does not present a likely risk of a major accident or disaster.

14.8 Residual Effects

No significant adverse residual effects are predicted during the construction, operation and decommissioning phases once all mitigation measures are applied.

Construction Phase

During the construction phase, there will be emissions from construction vehicles, however no significant negative impacts to air quality are predicted. Although dust will arise from construction activities, dust sensitive receptors are located at sufficient distance from works so that no significant impacts will occur. Works along the grid connection route are smaller in scale to the main wind farm works and will only pass roadside receptors for 1 to 2 days at a time. There will be GHG emissions from the construction of wind turbines and removal of forestry, hedgerow and the removal of a small amount of peat. Overall, provided mitigation measures are applied, the construction phase of the proposed development will have an adverse, not significant and short-term effect on air quality and climate.

Table 14-32: Construction Phase Residual Effect on Air Quality and Climate

Construction Phase Residual Effect on Air Quality and Climate						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Whole Wind Farm Development	Adverse	Not Significant	Extensive	Temporary to Short-Term	Direct	Likely

Once operational, there will be no significant adverse residual air quality effects or GHG emissions. The operation of the proposed development will displace air pollutants that would otherwise have been produced by fossil fuel generated electricity. By displacing fossil fuel generated electricity, the proposed development operational phase will help to reduce GHG emissions and contribute to national decarbonisation targets.

Overall, provided mitigation measures are applied, the operational phase of the development will have a positive, moderate and long-term effect on air quality and climate.

Table 14-33: Operational Phase Residual Effect on Air Quality and Climate

Operational Phase Residual Effect on Air Quality and Climate						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Whole Wind Farm Development	Positive	Moderate	Extensive	Long-Term	Direct	Likely

The decommissioning phase of the proposed development will be similar to the proposed construction stage however no excavations will be required, only dismantling of turbines and therefore less adverse effects are predicted. Overall, provided mitigation measures are applied, the decommissioning phase of the proposed development will have adverse, not significant and temporary to short-term effect on air quality and climate.

Table 14-34: Decommissioning Phase Residual Effect on Air Quality and Climate

Decommissioning Phase Residual Effect on Air Quality and Climate						
	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Whole Wind Farm Development	Adverse	Not Significant	Extensive	Temporary to Short-Term	Direct	Likely

14.9 Conclusions

There is the potential for dust nuisance to occur during the construction phase. However, considering the separation distance to nearby dwellings, in addition to strict adherence to mitigation measure outlined in this chapter, the impact on local air quality will not be significant.

There will be some CO_2 losses associated with the turbine life (manufacture, construction and decommissioning), and the disruption of the on-site natural sink resources. However, this will be quickly repaid once the wind farm is operational. The calculated CO_2 payback period is 0.9 years. The operational phase of the wind farm will offset 56174 tonnes CO_2 (based on a 5.7MW turbine wind farm providing 149,796MWh of annual renewable electricity) to 65043 tonnes CO_2 (based on a 6.6MW turbine wind farm providing 173,448MWh of annual renewable electricity) per year.

The operational life of Brittas Wind Farm will support the National Policy and Government Plans in line with our International and EU obligations to move to a low carbon economy by 2050. The operational life of Brittas Wind Farm will contribute positively towards national greenhouse gas emission reduction targets and will not result in any negative residual impacts to air quality.

Decarbonisation is critical to reducing rising global temperatures and the resultant adverse effects to the Planet and its occupants.

The proposed wind farm development will facilitate decarbonisation objectives at local and national levels as set out in the National Climate Action Plan (DCCAE, 2024) and the Tipperary County Development Plan 2022 – 2028.

14.10 References

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