Iarnród Éireann
Irish Rail

Rosslare ORE Hub

EIAR Environmental Topic Chapters

Chapter 18:

Air Quality

venterra | GDG GAVIN & DOHERTY GEOSOLUTIONS | NICHOLAS O'DWYER an RSK company

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LIST OF ABBREVIATIONS

AA	Appropriate Assessment
AADT	Annual Average Daily Traffic
AQLV	Air Quality Limit Value
EPA	Environmental Protection Agency
EU	European Union
GDG	Gavin & Doherty Geosolutions
HDV	Heavy Duty vehicle
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
IMO	International Maritime Organisation
IT	Interim Target
MARPOL	International Convention for the Prevention of Pollution from Ships
NIS	Natura Impact Statement
NO_2	Nitrogen Dioxide
NPWS	National Parks and Wildlife Service
NRMM	Non-Road Mobile Machinery
ODPM	Office of Deputy Prime Minister
ORE	Offshore Renewable Energy
PM	Particulate Matter
REM	Road Emissions Model
SPA	Special Protection Area
TII	Transport Infrastructure Ireland
VDI	Verein Deutscher Ingenieure
WCC	Wexford County Council
WHO	World Health Organisation

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18 AIR QUALITY

18.1 INTRODUCTION

Iarnród Éireann – Irish Rail is applying for development permission for the Rosslare Offshore Renewable Energy Hub (hereafter the 'Proposed Development'), located immediately adjacent and to the northwest of the existing Rosslare Europort at Rosslare Harbour in County Wexford, which is operated by Iarnród Éireann. The Proposed Development includes capital dredging to achieve navigable depths for vessels delivering ORE components; land reclamation to create a storage area for these components; and construction of two new berths to facilitate loading and unloading of ORE components. The land reclamation works include infilling the existing small boat harbour, after the construction of a new small boat harbour. The Proposed Development also includes the installation of a new slipway and facility for local clubs, such as the Sea Scouts.

The purpose of the Proposed Development is to provide a facility for the efficient handling and storage, marshalling, staging and integration of ORE components to facilitate installation of offshore wind energy projects by ORE developers and operators. The Proposed Development is designed to provide facilities that accommodate a wide range of infrastructure uses, both for current requirements and anticipated future needs. For instance, the Proposed Development could be used for traditional port activities if required, including during periods of reduced ORE-related activity. Refer to Environmental Impact Assessment Report (EIAR) Chapter 6: Project Description for further detail.

This chapter of the EIAR presents the assessment of the likely significant effects (as per the "EIA Regulations") of the Proposed Development on Air Quality arising from the construction and operation of the Proposed Development, both alone and cumulatively with other projects. This chapter was informed by the Proposed Development scoping report (21285-R-005-02-Rosslare OWS EIASR), which was issued to the following topic-relevant stakeholders:

- Environmental Protection Agency (EPA)
- Wexford County Council (WCC)

The assessment presented in this chapter is informed by the following EIAR chapters and technical appendices:

- Chapter 6: Project Description
- Chapter 17: Traffic and Road Transport
- Technical Appendix 18: Rosslare Europort Baseline Dust Monitoring Survey (AONA Environmental Consulting Ltd, July 2023)

This chapter provides a summary of guidance relevant to Air Quality and outlines the data sources used to characterise the Air Quality Study Area. Building on the general EIA methodology outlined in Chapter 1: Introduction and Methodology, the air quality-specific methodology followed in assessing the impacts of the Proposed Development on air quality-specific environmental receptors is set out, as is the assessment of likely effects on the air quality-specific human and ecological receptors arising from the construction and operation of the Proposed Development. Relevant mitigation

measures, following the 'mitigation hierarchy' of avoidance, minimisation, restoration and offsets, and/or monitoring requirements, are proposed in respect of any significant effects and a summary of residual impacts is provided, where relevant.

18.1.1 RELEVANT LEGISLATION AND GUIDELINES

18.1.1.1 LEGISLATION

Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values for a range of air pollutants in ambient air. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive 2024/2881/EC of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe. The EU formally adopted this Directive on 14 October 2024. This Directive supersedes EU Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe and sets out new air quality standards for pollutants to be reached by 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines. The Air Quality Standards Regulations 2022 (S.I. 739 of 2022) transposed EU Directive 2008/50/EC. With the adoption of Directive (EU) 2024/2881, Ireland must transpose this Directive into national law (i.e., update the Air Quality Standards Regulations) before 11 December 2026 in order for them to become the legal standards in Ireland.

The ambient air quality standards applicable for nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$) are outlined in Table 18.1. This is based on the assumption that Ireland has adopted Directive (EU) 2024/2881. The limit values set out in Directive 2024/2881/EC will need to be achieved by 2030, with the limit values set out in the Air Quality Standards Regulations 2022 (and future updated regulations) applicable until 2030.

Table 18.1: Ambient Air Quality Limit Values

Pollutant	2008/50/EC Limit Type	2008/50/EC Limit Value (applicable until 2030)	2024/2881/EC Limit Type	2024/2881/EC Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO_2)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m^3
	n/a	n/a	24-hour limit for protection of human health - not to be	50 µg/m^3

Pollutant	2008/50/EC Limit Type	2008/50/EC Limit Value (applicable until 2030)	2024/2881/EC Limit Type	2024/2881/EC Limit Value (to be attained by 2030)
			exceeded more than 18 times/year	
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
NO_X	Annual limit for protection of vegetation	30 µg/m^3	Annual limit for protection of vegetation	30 µg/m^3
Particulate Matter (as PM_{10})	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
Particulate Matter (as $PM_{2.5}$)	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m^3
	Annual limit for protection of human health	25 µg/m^3	Annual limit for protection of human health	10 µg/m^3

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026 (shown in Table 18.2), the IT4 targets by 2030 and the final targets by 2040 (shown in Table 18.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m^3. The strategy also acknowledges that "meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2".

Annex II of Directive 2024/2881/EC gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that "Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred

to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II."

These assessment thresholds relate to monitoring of ambient air quality by Member States, where "exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years."

The applicable air quality limit values for the purposes of this assessment are those set out in Table 18.1.

Table 18.2: WHO Air Quality Guidelines 2021 (WHO, 2021)

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	24-hour limit for protection of human health	-	-	25 µg/m^3
	Annual limit for protection of human health	20 µg/m^3	-	10 µg/m^3
PM (as PM_{10})	24-hour limit for protection of human health	75 µg/m^3	50 µg/m^3	45 µg/m^3
	Annual limit for protection of human health	30 µg/m^3	20 µg/m^3	15 µg/m^3
PM (as $PM_{2.5}$)	24-hour limit for protection of human health	37.5 µg/m^3	25 µg/m^3	15 µg/m^3
	Annual limit for protection of human health	15 µg/m^3	10 µg/m^3	5 µg/m^3

Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$). The EU ambient air quality standards outlined in Table 18.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of the Proposed Development.

With regard to dust deposition, the German TA-Luft (Technische Anleitung zur Reinhaltung der Luft) standard for dust deposition (non-hazardous dust) (German Verein Deutscher Ingenieure (VDI), 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one-year period at any receptors outside the construction site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled '*Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*' (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m^2/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the Proposed Development.

18.1.1.2 GUIDANCE

This chapter has been prepared having regard to the following guidelines and guidance with respect to air quality:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022)
- Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management (IAQM), 2024)
- A Guide to The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020)
- TII Guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022)
- TII Road Emissions Model (REM) online calculator tool (TII, 2024).

18.1.1.3 POLICY

The National Planning Framework (Government of Ireland, 2025) states objectives to improve air quality:

- National Policy Objective 93 - Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green and blue infrastructure planning and innovative design solutions.

The Wexford County Development Plan 2022-2028 (WCC, 2021) states several air quality objectives for new developments:

- AQ01 - To have regard to the Air Quality Standards Regulation 2011 when assessing planning applications for development which may have effects on air quality.
- AQ02 – To encourage sustainable industrial developments by promoting the use of cleaner technologies and production techniques, reducing waste production, conservation and recycling of materials.

- AQ03 – To manage development to provide the efficient use of land and infrastructure, thereby controlling and limiting air emissions.
- AQ04 – To require the submission of measures to prevent and reduce dust and airborne particulate emissions for activities that may have a negative or adverse effect on air quality.
- AQ05 - To promote a modal change from private car use to other types of travel and to promote the use of public transport as a means of reducing greenhouse gas emissions and improving air quality.

These objectives have all been considered as part of the assessment.

18.2 ASSESSMENT METHODOLOGY

18.2.1 STATEMENT OF COMPETENCE

This chapter was completed by Dr. Avril Challoner, a Principal Environmental Consultant in the Air Quality and Climate section of AWN Consulting, with 12-years of consultancy experience. She holds a BEng (Hons) in Environmental Engineering from the National University of Ireland Galway, a HDip in Statistics from Trinity College Dublin, and has completed a PhD in Environmental Engineering (Air Quality) at Trinity College Dublin. She is a Chartered Environmentalist (CEnv), Chartered Scientist (CSci), Member of the Institute of Air Quality Management, Member of the Institute of Environmental Management and Assessment (IEMA) and specialises in the fields of air quality, climate, EIA and air dispersion modelling. She has undertaken air quality and climate impact assessments for a wide array of development types including transportation schemes (active, public and private transport), renewable energy schemes and residential schemes, from constraints through to route selection, EIAR and oral hearing stage.

18.2.2 TOPIC-SPECIFIC CONSULTATION

The EIA Scoping Report was shared with the following bodies:

- Environmental Protection Agency
- Wexford County Council

A meeting was held with Wexford County Council in July 2022 to discuss the EIAR Scoping report. Wexford County Council advised on baseline monitoring requirements and approved the baseline monitoring locations and plan for dust monitoring.

No additional consultation with specific relevant bodies was conducted in relation to the air quality assessment. Project specific monitored data and publicly available EPA data noted in Section 18.2.3 was reviewed in order to obtain the relevant background information to inform the assessment.

18.2.3 DATA SOURCES

Publicly available data from the following bodies was consulted in order to obtain the relevant background information to inform the air quality assessment:

- Environmental Protection Agency (EPA)
- Met Éireann

- National Parks and Wildlife Services

The following sources were used to inform the air quality assessment:

- Environmental Protection Agency (EPA) annual air quality monitoring reports – Air Quality in Ireland 2024 (EPA, 2025) and previous reports 2020 – 2023
- Met Éireann historical 30-year average (1978-2007) meteorological data for Rosslare, Co. Wexford (Met Éireann, 2024)
- Met Éireann meteorological data (2019 – 2023) for Johnstown Castle, Co. Wexford (Met Éireann, 2024)
- Google Satellite mapping (Google, 2024)
- National Parks and Wildlife Service Designations Viewer (NPWS, 2024)

18.2.4 APPROACH TO ASSESSMENT OF EFFECTS

18.2.4.1 CONSTRUCTION DUST ASSESSMENT

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of the Proposed Development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. TII recommends the use of the latest IAQM construction dust guidance (2014, revised for v2.2 in 2024in its guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022).

The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential impacts. These are:

- Demolition
- Earthworks
- Construction
- Trackout (movement of heavy vehicles).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from construction activities. This allows the level of site-specific mitigation to be determined.

18.2.4.2 CONSTRUCTION PHASE TRAFFIC ASSESSMENT

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a Proposed Development and should be included in the local air quality assessment. While the guidance is

specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more
- Heavy duty vehicle (HDV) AADT changes by 200 or more
- Daily average speed change by 10 km/h or more
- Peak hour speed change by 20 km/h or more
- A change in road alignment by 5 m or greater

A Traffic and Transport Impact Assessment has been prepared for the Proposed Development and is enclosed separately. Additionally, Chapter 17: Traffic and Road Transport has been consulted. As per Chapter 17, it has been determined that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT. In addition, the Proposed Development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from further assessment as there is no potential for significant impacts to air quality with respect to human or ecological receptors.

18.2.4.3 OTHER CONSTRUCTION PHASE EMISSIONS

Emissions from construction phase Non-Road Mobile Machinery (NRMM), such as mechanical excavators and earthmovers, will have the potential to increase NO_2 and PM_{10} concentrations locally, when in use within the Proposed Development Boundary. According to IAQM guidance (IAQM, 2024), experience of assessing the exhaust emissions from on-site plant (NRMM) and onsite traffic suggests that they are unlikely to have a significant effect on local air quality, due to the intermittent nature of their use within the confinement of the Proposed Development Boundary and therefore do not need to be quantitatively assessed.

Emissions from NRMM associated with the Proposed Development will be temporary and localised and will be controlled via the adherence to emissions standards established by Regulation (EU) 2016/1628 and through best-practice mitigation measures (IAQM, 2024 and Section 18.5.1). Therefore, construction phase NRMM emissions are highly unlikely to be significant and have not been considered further in this assessment. In addition, construction vessel movements have been reviewed; however, they are expected to be in the region of 1-2 movements per day during construction and therefore are considered negligible. Therefore, they are scoped out of this assessment.

18.2.4.4 OPERATIONAL PHASE TRAFFIC ASSESSMENT

Operational phase traffic has the potential to impact air quality and subsequently human health or ecology through the release of air pollutants. The TII guidance 'Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106' (TII, 2022a) scoping criteria outlined in Section 18.4.2 was used to determine whether any road links can be classed as 'affected' by the Proposed Development during the operational phase. As per the criteria above, the Proposed Development will not result in an increase in the operational phase traffic in the opening year by more than 1,000 AADT or 200 HGV. Additionally, there are no proposed road alignment or traffic speed changes predicted (See Chapter

17: Traffic and Road Transport of the EIAR for further details on traffic). Therefore, as no assessment thresholds are exceeded there is no potential for significant impacts to air quality, human health or ecology from traffic emissions during the operational phase of the Proposed Development. Therefore, a detailed modelling assessment is not required.

Although the primary use of the facility is expected to be for ORE operations, the Proposed Development may support traditional port activities (in periods where there is no ORE project demand or where the Proposed Development is underutilised for ORE related activities. The change in traffic associated with use of the ORE facilities for traditional port operations has also been assessed against the TII scoping criteria in Section 18.2.4 and deemed to not exceed them. Therefore, as no assessment thresholds are exceeded, there is no potential for significant impacts to air quality, human health or ecology from traffic emissions when the ORE Hub facilities are used for traditional port activities during the operational phase of the Proposed Development. Therefore, a detailed modelling assessment is not required.

18.2.4.5 OTHER OPERATIONAL PHASE EMISSIONS

Operational vessel movements have been reviewed, as per Chapter 20: Shipping and Navigation. The main pollutants of concern associated with vessel movements are nitrogen oxides (NOx), particulate matter (PM) and sulphur dioxide (SO_2). Shipping emissions are regulated under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), adopted by the International Maritime Organisation (IMO) on the 2nd November 1973 to which Ireland is a member. Pollutant concentrations should only be compared to the relevant air quality limit values where there is representative exposure. There are no offshore human receptors which are sensitive to air quality, and for marine-based ecological receptors such as Qualifying Interests of European Protected sites “the atmospheric pathway is not the major source of nitrogen inputs” (Centre for Ecology and Hydrology, 2024). The main receptors which may be affected would be a small number of isolated locations of relevant human exposure (e.g., residences) close to the shoreline and terrestrial designated ecological sites. There are no sensitive human or ecological receptors within 200 m of the location of vessel emissions. The number of projected vessels associated with the operational phase (up to 8 daily) is minimal and the associated atmospheric emissions will be small in comparison to those from the total shipping in this region of the Irish Sea. The dispersive nature of offshore winds means concentrations of pollutants will return to background levels quickly. Given the likely negligible increases of air pollutants on site, the regulation of emissions under MARPOL and the distance from any shore-based receptors, it is expected that effects would be insignificant. It is therefore concluded that all air quality impacts from vessel movements are scoped out from further consideration in this assessment.

More information on ecological receptors and relevant European designated marine sites can be found in this EIAR in Chapter 10: Terrestrial Ecology, Chapter 11: Benthic Ecology, Chapter 12: Fish, Shellfish and Turtle Ecology, Chapter 13: Marine Mammals and Chapter 14: Ornithology. Interactions with European Protected Sites are also considered from an Appropriate Assessment perspective in the Appropriate Assessment (AA) Screening Report and, where relevant, the Natura Impact Statement (NIS) which accompany the application.

18.2.4.6 SIGNIFICANCE CRITERIA

The TII guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do-Nothing scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) and reproduced in Table 18.3. These criteria have been adopted for the Proposed Development to predict the effect of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the Proposed Development.

Table 18.3: Quality Significance Criteria

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: TII (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

As per Table 18.3, a neutral effect is one where a change in concentration at a receptor is:

- 5% or less where the opening year, without the Proposed Development, annual mean concentration is 75% or less of the standard; or
- 1% or less where the opening year, without the Proposed Development, annual mean concentration is 94% or less of the standard.

Where an effect does not meet the criteria for neutral, as described above, the effect can either be positive or negative. The TII guidance (2022) states that *"the evaluation of significance of effects for the operational phase should be undertaken for the opening year only, as the design year is likely to show lower total pollutant concentrations and changes in concentration"* (TII 2022). The criteria are stated above in Section 18.2.4.2. The opening year (2028) generated traffic does not exceed this criterion and so no significant effects are predicted for the operational phase.

18.2.1 MITIGATION

As discussed in Chapter 1: Introduction and Methodology, three types of mitigation measures are considered in this chapter.

- Primary mitigation
- Secondary mitigation
- Tertiary mitigation

18.2.2 DIFFICULTIES AND UNCERTAINTIES

There were no significant difficulties or uncertainties related to this assessment.

18.3 BASELINE: AIR QUALITY IN RECEIVING ENVIRONMENT

18.3.1 METEOROLOGICAL DATA

A key factor in assessing temporal and spatial variations in air quality are the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e., traffic levels) (WHO, 2021). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Johnstown Castle meteorological station, which is located approximately 11 km west of the site. Johnstown Castle meteorological station data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 18.1). For data collated during five representative years (2019 – 2023), the predominant wind direction is westerly to south-westerly.

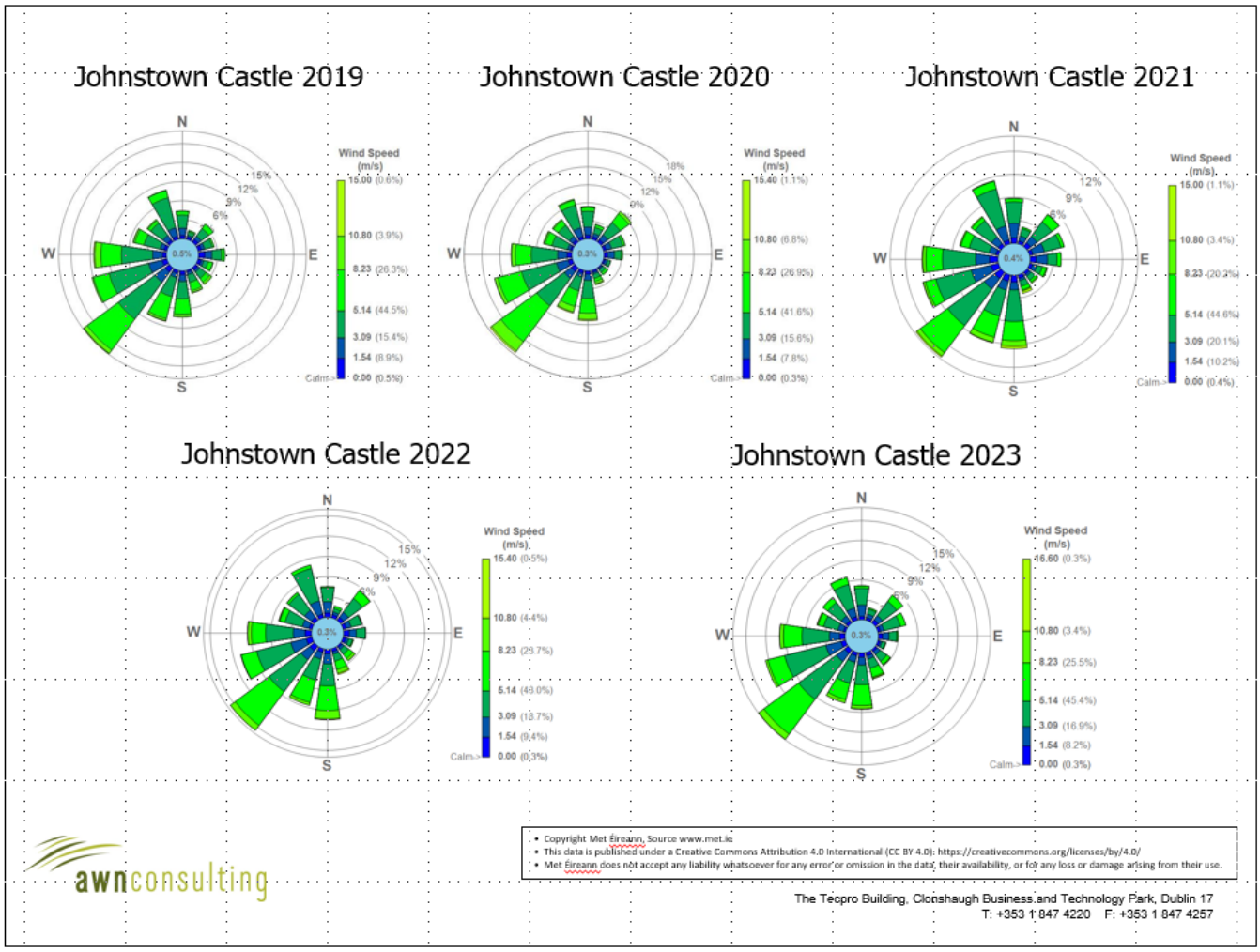

Figure 18.1: Johnstown Castle Windrose 2019 – 2023

18.3.2 EPA BASELINE AIR QUALITY

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2023*" (EPA, 2025). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022) four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2025). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the Proposed Development site is within Zone D (EPA, 2025). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the Proposed Development. The background concentration accounts for all non-traffic derived emissions (e.g., natural sources, industry, home heating etc.).

18.3.2.1 NITROGEN DIOXIDE (NO_2)

Long-term national NO_2 monitoring is carried out by the EPA. Representative Zone D suburban background locations are at Emo, Kilkitt, Castlebar and Edenderry for the period 2020 – 2024 (see Table 18.4) (EPA, 2025). Long term average concentrations are significantly below the current annual average limit of 40 µg/m^3. Average results range from 2 – 10 µg/m^3. Additionally, there were no exceedances of the hourly limit value of 200 µg/m^3.

The monitoring sites in the suburban backgrounds are the most representative of the Proposed Development location. Concentrations of NO_2 at these sites (Castlebar and Edenderry) ranged from 6 – 10 µg/m^3 over the period 2020 – 2024. The NO_2 5-year annual average for the sites over this period suggests an overall average of no more than 5 µg/m^3 as a background concentration. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the Proposed Development is 5 µg/m^3.

Table 18.4: Trends In Zone D Air Quality - Nitrogen Dioxide (NO_2)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Emo Court Co. Laois (Rural Background)	Annual Mean NO_2 (µg/m^3)	3	4	3	2	3
	1-hr Mean NO_2 Values >200 (µg/m^3)	0	0	0	0	0
Kilkitt, Co. Monaghan (Rural Background)	Annual Mean NO_2 (µg/m^3)	2	2	2	2	2
	1-hr Mean NO_2 Values >200 (µg/m^3)	0	0	0	0	0
Castlebar, Co. Mayo (Suburban Background)	Annual Mean NO_2 (µg/m^3)	6	6	8	7	7
	1-hr Mean NO_2 Values >200 (µg/m^3)	0	0	0	0	0
Edenderry, Co. Offaly (Suburban Background)	Annual Mean NO_2 (µg/m^3)	-	9	7	9	10
	1-hr Mean NO_2 Values >200 (µg/m^3)	-	0	0	0	0

18.3.2.2 PM_{10}

EPA carried out continuous PM_{10} monitoring at five representative Zone D locations from 2019 – 2023; Cobh in Cork Harbour, Kilkitt, Castlebar, Edenderry and Enniscorthy. Annual average PM_{10} concentrations across the sites ranged from 7 – 18 µg/m^3 over the 2020 – 2024 period (see Table 18.5). There were at most 5 exceedances of the daily limit of 50 µg/m^3 in 2024 (35 exceedances are permitted per year) (EPA, 2025). The overall annual average concentration for this 5-year period is 12 µg/m^3. Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the Proposed Development is 12 µg/m^3.

Table 18.5: Trends In Zone D Air Quality - PM_{10}

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Cobh Cork Harbour, Co. Cork (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	13	13	14	11	-
	24-hr Mean > 50 µg/m^3 (days)	0	1	1	0	-
Kilkitt, Co. Monaghan (Rural Background)	Annual Mean PM_{10} (µg/m^3)	8	8	9	7	7
	24-hr Mean > 50 µg/m^3 (days)	0	0	0	0	0
Castlebar, Co. Mayo (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	14	14	11	10	10
	24-hr Mean > 50 µg/m^3 (days)	2	1	0	0	0
Edenderry, Co. Offaly (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	14	14	11	10	16
	24-hr Mean > 50 µg/m^3 (days)	-	4	10	6	5
Enniscorthy, Co. Wexford (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	15	14	15	13	14
	24-hr Mean > 50 µg/m^3 (days)	5	1	5	2	3

18.3.2.3 $PM_{2.5}$

Average $PM_{2.5}$ levels in Edenderry and Enniscorthy, which also monitor PM_{10}, over the period 2020 - 2024 ranged from 9 – 18 µg/m^3 (EPA, 2025). The overall annual average concentration for this 5-year period is 12 µg/m^3. Based on this information, an estimate of the background $PM_{2.5}$ concentration in the region of the Proposed Development is 12 µg/m^3.

Table 18.6: Trends In Zone D Air Quality - $PM_{2.5}$

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Enniscorthy, Co. Wexford (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	12	10	10	9	9
Edenderry, Co. Offaly (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	-	18	13	12	12

18.3.2.4 SUMMARY

Based on the above data obtained from EPA, the air quality in the suburban background area is generally good, with concentrations of the key pollutants generally well below the current relevant limit values. However, these limit values are reducing in 2030 as detailed in Section 18.1.1.1. In its annual Air Quality Reports (EPA, 2025), the EPA has indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations.

In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predicts that exceedances in the particulate matter limit values

are likely in future years if burning of solid fuels for residential heating continues. The measures set out in the Clean Air Strategy for Ireland (Government of Ireland, 2023) aim to work towards solutions to ensure that air pollution concentrations are reduced in order to comply with the future changes in limit values.

18.3.3 PROJECT SPECIFIC BASELINE MONITORING

In addition to the long-term EPA data, short term project specific monitoring was conducted by AONA Environmental, commissioned by Iarnród Éireann - Irish Rail. A continuous baseline $PM_{2.5}$, PM_{10} and dust monitoring survey for the proposed Rosslare Europort Offshore Renewable Energy Hub development from 23rd March to 24th June 2023. Full details of the results including the survey locations can be found in the associated monitoring report contained in EIAR Technical Appendix 18: Rosslare Europort Baseline Dust Monitoring Survey. The monitoring locations were chosen to represent potential sensitive receptors and were chosen with the approval of Wexford County Council's Environment Team. The monitoring locations were:

- STN1 – Caragh Lodge
- STN2 - Cliff Road (End)
- STN3 - Cliff Road (Entrance)
- STN4 – RNLI Station

The short-term results cannot be directly compared against the annual limit values detailed in Section 18.1.1 and Table 18.1, as the monitoring has not been annualised and is short-term in nature and so is likely to be much higher than an annualised mean. However, at all stations the recorded concentrations were below both the annual mean and the 24-hour limit values, which is indicative that concentrations of PM_{10} and $PM_{2.5}$ at the monitored locations are within these limits.

Table 18.7: PM_{10} & $PM_{2.5}$ concentration results (µg/m³)

Station	Average $PM_{2.5}$ concentration (µg/m³)	Average PM_{10} concentration (µg/m³)
STN 1	10.4	18.1
STN 2	13.8	26.6
STN 3	6.6	11.5

Table 18.8: Dust deposition rate results (mg/m²/day)

Station	Average
STN 1	10.4
STN 2	13.8
STN 3	6.6
STN 4	82.7

18.3.4 SENSITIVITY OF THE RECEIVING ENVIRONMENT

18.3.4.1 CONSTRUCTION PHASE

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM,2024), prior to assessing the impact of dust from a Proposed Development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas 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.

In terms of receptor sensitivity to dust soiling, there are no high sensitivity residential properties within 100 m of the Proposed Development Boundary, but there are between 10 – 100 receptors between 100 – 250 m (see Figure 18.2). Based on these receptor numbers and using the IAQM criteria in Table 18.9, the sensitivity of the area to dust soiling impacts from the Proposed Development is low.

Table 18.9: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

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 based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works.

A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the Proposed Development is 15 µg/m^3. There are no high sensitivity residential properties within 100 m of the Proposed Development Boundary, but there are between 10 – 100 high sensitivity residential receptors between 100 – 250 m (see Figure 18.2). Based on the IAQM criteria outlined in Table 18.10 the worst-case sensitivity of the area to dust-related human health effects is low.

Table 18.10: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50 m from the site, and 50 m from site access roads, up to 250 m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site (European, National or local designation) and the potential dust sensitivity of the ecologically important species present. There is one ecological receptor, Seas off Wexford Special Protection Area (SPA) that meets these criteria within the study area and therefore there is the potential for impacts to sensitive ecology from construction dust emissions.

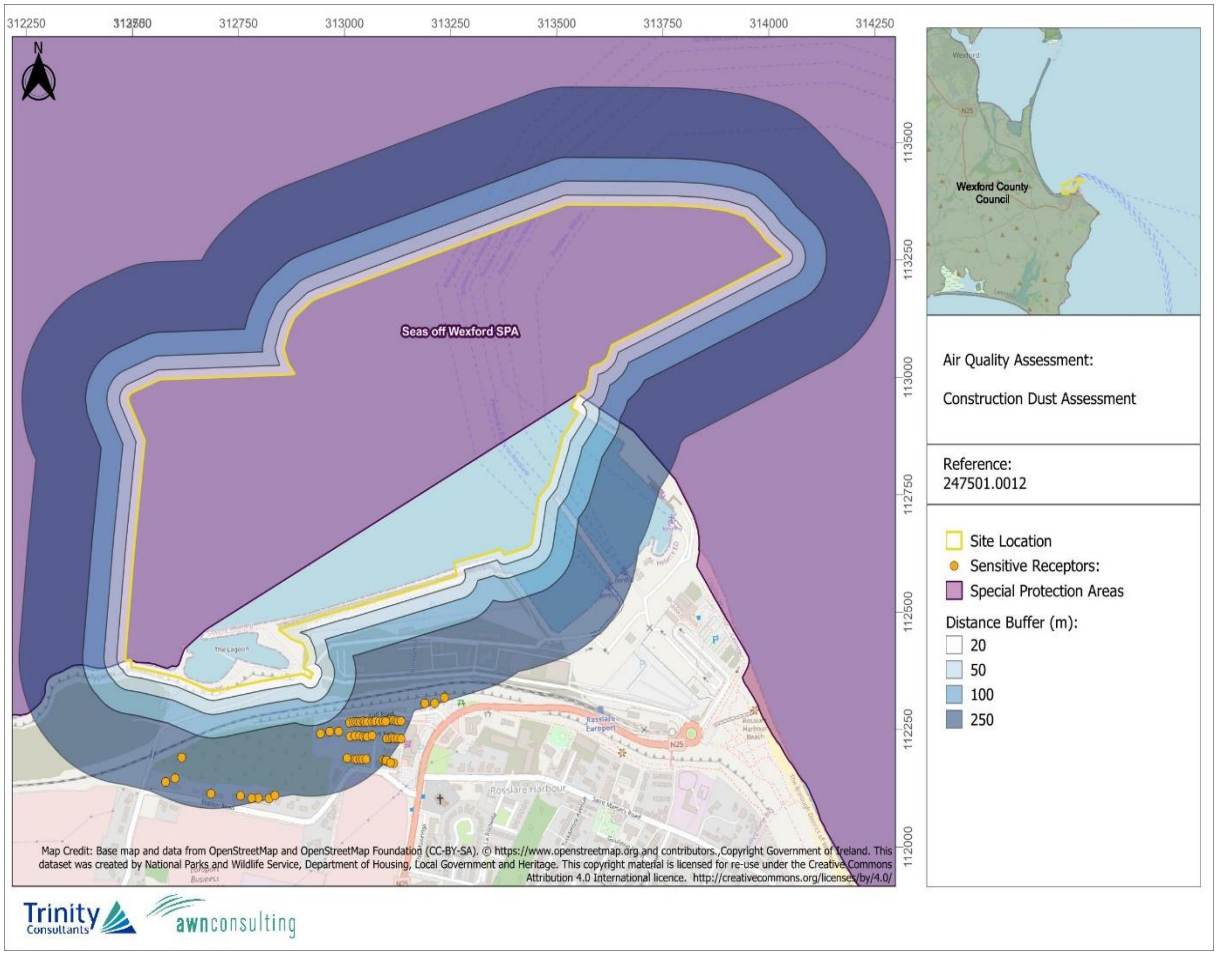

Figure 18.2: Sensitive Receptors within 20m, 50m, 100m and 250m of the Site

18.4 ASSESSMENT OF EFFECTS

18.4.1 "DO-NOTHING" SCENARIO

Under the Do-Nothing Scenario, no construction works will take place and the identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased road and sea traffic volumes and associated air emissions will also not occur. The ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding area, changes in road traffic, etc.).

In the Do-Nothing scenario the facilitation of offshore windfarm construction, which is the main operational activity of the Proposed Development in the short to medium term (i.e. out to 2040), would be required to occur from an alternative location. There is the potential for further impacts at this location if it is within 50 m of sensitive ecology or has additional human receptors in close proximity to the project redline boundary (see Section 0). Should the Offshore Renewable Energy (ORE) not be provided in any location, the construction of offshore windfarms, and the clean renewable power which replaces power generated from fossil fuels, would be delayed or prevented.

Therefore, the Do-Nothing scenario can be considered adverse to neutral in terms of air quality.

18.4.2 CONSTRUCTION PHASE IMPACTS

18.4.2.1 CONSTRUCTION PHASE TRAFFIC EMISSIONS IMPACTS

There is the potential for traffic emissions to impact air quality with respect to human health and ecology in the short-term over the construction phase, particularly, due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed, and a detailed air quality assessment has been scoped out as none of the road links impacted by the Proposed Development satisfy the TII assessment criteria in Section 18.2.4.2.

It can therefore be determined that the construction stage traffic will have an imperceptible, neutral, short-term and non-significant impact on air quality.

18.4.2.2 CONSTRUCTION PHASE DUST IMPACTS

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2024). The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity.

In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Johnstown Castle meteorological data indicates that the prevailing wind direction is south-westerly, and wind speeds are generally moderate in nature (see Section 18.3.1). Also, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30-year average data is not available for Johnstown Castle, however 1978-2007 average data for Rosslare meteorological station (the station was shut in 2007) indicates that on average of 175 days per year have rainfall over 0.2 mm (Met Éireann, 2024) and therefore it can be determined that 47% of the time dust generation will be reduced due to natural meteorological conditions.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 0). The major dust generating activities are divided into four types within the IAQM (2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

Demolition

No demolition is required for the Proposed Development; therefore, the assessment is scoped out.

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large**: Total site area > 110,000 m^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 > 6 m in height;
- **Medium**: Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3 – 6 m in height;
- **Small**: Total site area < 18,000 m^2, soil type with large grain size (e.g., sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 3 m in height, earthworks during wetter months.

The Proposed Development Boundary within the EIAR application is greater than 110,000 m^2; although not all of it will involve earthworks due to its coastal nature. However, in order to be conservative, the proposed earthworks can be classified as large. The sensitivity of the area, as determined in Section 0, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. Table 18.12 summarises the assessment, which uses the criteria from Table 18.11. In terms of receptor sensitivity to dust soiling, there are no high sensitivity residential properties within 100 m of the Proposed Development Boundary, but there are between 10 – 100 receptors between 100 – 250 m (see Figure 18.2). Based on these receptor numbers and using the IAQM criteria, the sensitivity of the area to dust soiling impacts from the Proposed Development is low. Therefore, despite a large dust emission magnitude, the low sensitivity results in an overall low risk for both dust soiling and dust-related health impacts. This risk categorised as low is as a result of the proposed earthworks activities in the absence of mitigation.

Table 18.11: Criteria for Rating Risk of Dust Impacts – Earthworks

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

Table 18.12: Risk of Dust Impacts – Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	Low	Large	Low
Human Health	Low		Low

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** Total building volume > 75,000 m^3, on-site concrete batching, sandblasting;
- **Medium:** Total building volume 12,000 m^3 – 75,000 m^3, potentially dustyconstruction material (e.g., concrete), on-site concrete batching;

- **Small:** Total building volume < 12,000 m^3, construction material with low potentialfor dust release (e.g., metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as large as a worst-case. Table 18.13 summarises the assessment, which uses the criteria from Table 18.14. In terms of receptor sensitivity to dust soiling, there are no high sensitivity residential properties within 100 m of the Proposed Development Boundary, but there are between 10 – 100 receptors between 100 – 250 m (see Figure 18.2). Based on these receptor numbers and using the IAQM criteria in Table 18.9, the sensitivity of the area to dust soiling impacts from the Proposed Development is low. Despite a large dust emission magnitude, the low sensitivity to dust soiling and dust-related human health impacts results in an overall low risk for both dust soiling and dust-related health impacts. This risk categorised as low is as a result of the proposed construction activities in the absence of mitigation.

Table 18.13: Criteria for Rating Risk of Dust Impacts – Construction

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

Table 18.14: Risk of Dust Impacts – Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-related Impacts
Dust Soiling	Low	Large	Low
Human health	Low		Low

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

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

The dust emission magnitude for the proposed trackout activities can be classified as medium, as there will be less than 50 outward HGV movements per day. Table 18.16 summarises the assessment, which uses the criteria from Table 18.15. In terms of receptor sensitivity to dust soiling, there are no high sensitivity residential properties within 100 m of the Proposed Development Boundary, but there are

between 10 – 100 receptors between 100 – 250 m (see Figure 18.2). Based on these receptor numbers and using the IAQM criteria in Table 18.9, the sensitivity of the area to dust soiling impacts from the Proposed Development is low. Despite a medium dust emission magnitude, the low sensitivity to dust soiling and dust-related human health impacts results in an overall low risk for both dust soiling and dust-related health impacts. This risk categorised as low is as a result of the proposed trackout activities in the absence of mitigation.

Table 18.15: Criteria for Rating Risk of Dust Impacts – Trackout

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

Table 18.16: Risk of Dust Impacts – Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-related Impacts
Dust soiling	Low	Medium	Low
Human health	Low		Low

Summary of Dust Emission Risk

The risk of dust impacts as a result of the Proposed Development are summarised in Table 18.17 for each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring.

Table 18.17: Summary of construction phase dust impact risk used to define site-specific mitigation

Potential Impact	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Ecology	N/A	High Risk	High Risk	High Risk
Dust Soiling	N/A	Low Risk	Low Risk	Low Risk
Human Health	N/A	Low Risk	Low Risk	Low Risk

Overall, to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, a range of dust mitigation measures associated with a high risk of dust impacts must be implemented. In the absence of mitigation, dust impacts are predicted to be short-term, localised, negative (adverse), slight and non-significant. When the dust mitigation measures detailed in the mitigation section of this chapter (Section 18.5.1) are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

18.4.3 OPERATIONAL PHASE IMPACTS

There is the potential for traffic emissions to impact air quality during the operational phase, due to increased vehicle numbers accessing the site. The operational stage traffic has been reviewed and a detailed air quality assessment has been scoped out. None of the road links impacted by the Proposed Development in the opening year satisfy the TII (TII, 2022) scoping criteria in Section 18.2.4.

Overall, the impact of the Proposed Development on ambient air quality in the operational stage, using the EPA EIA terminology (EPA, 2022), is long-term, localised, direct, neutral, imperceptible and non-significant.

18.4.4 CUMULATIVE EFFECTS AND OTHER INTERACTIONS

18.4.4.1 CONSTRUCTION PHASE

According to the IAQM guidance (2024), should the construction phase of the Proposed Development coincide with the construction phase of any other developments within 500 m, then, there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. A review of other permitted developments within 500 m of the site was conducted, in order to identify other developments with the potential for overlapping construction phases that may result in cumulative construction dust impacts. The following developments were identified as having the highest potential for cumulative impacts should the construction phases coincide due to their scale or location:

- Rosslare Europort Terminal 7 (Ref: 20211322)
- N25 Rosslare Europort Access Road (Ref: 314015)
- Rosslare Coastal Erosion and Flood Relief Scheme
- Permission for an extension to the existing Berth 3

Provided the mitigation measures outlined in Section 18.5.1, are implemented throughout the construction phase of the Proposed Development significant cumulative dust impacts are not predicted.

With mitigation measures (as per Section 18.5.1) in place, there are no significant cumulative impacts to air quality predicted for the construction phase. Impacts will be short-term, localised, negative (adverse), imperceptible and non-significant.

18.4.4.2 OPERATIONAL PHASE

The traffic data used to assess the operational stage impacts to air quality included the cumulative traffic associated with the Proposed Development, as well as other existing and permitted developments in the local area (see Chater 16: Traffic and Transportation (Onshore)). The measures set out in the Clean Air Strategy for Ireland (Government of Ireland, 2023) aim to work towards solutions to ensure that air pollution concentrations are reduced in order to comply with the future changes in limit values.

The traffic data used in the operational phase air quality assessment included cumulative traffic associated with other developments within the area. Cumulative impacts are considered direct, long-term, localised, neutral and imperceptible which is overall not significant in EIA terms.

18.5 MITIGATION MEASURES FOR AIR QUALITY

18.5.1 CONSTRUCTION PHASE MITIGATION MEASURES

The proactive control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing dust monitoring. The mitigation measures for controlling dust are listed below. These measures will be incorporated into the CEMP prepared for the site.

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following measures draw on best practice guidance from Ireland, the UK (IAQM, 2024; BRE, 2003; The Scottish Office, 1996; UK Office of Deputy Prime Minister 2002) and the USA (USEPA, 1997).

18.5.1.1 SITE MANAGEMENT

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will consider the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 18.1 for the windrose). The prevailing wind, predominantly westerly to south-westerly, is expected to be beneficial, as it will help disperse dust away from sensitive residential receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2024; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7 m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales), as these conditions increase the potential for significant dust emissions.

While the prevailing meteorological conditions in the vicinity of the site are generally favourable for dust suppression for much of the year, occasional periods of high winds will require additional precautions to prevent dust nuisance. The following measures will be implemented to prevent dust nuisance during unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary; this notice board should also include head/regional office contact details
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out
- It is the responsibility of the contractor to demonstrate full compliance with the dust control conditions herein at all times
- The procedures put in place will be strictly monitored and assessed at all times
- The dust minimisation measures will be reviewed at regular intervals throughout the works to ensure their effectiveness and to maintain the goal of minimising dust emissions through the use of best practices and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem. The specific dust control measures to be employed are described below.

Preparing and Maintaining the Site

- The site layout will be planned so that machinery and dust causing activities are located as far away as possible from sensitive receptors
- Solid screens or barriers will be erect around dusty activities or along the site boundary, ensuring that they are at least as high as any stockpiles on site
- Specific operations with a high dust production potential will be fully enclosed, particularly where the site is active for an extensive period
- Avoid site runoff of water or mud
- Site fencing, barriers and scaffolding will be regularly cleaned using wet methods
- Materials with a potential to produce dust will be removed from the site as soon as possible; if materials are to be re-used on-site, they should be properly covered, seeded or fenced to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- All vehicles will be switched when stationary ensuring no idling vehicles
- The use of diesel or petrol -powered generators will be avoided where possible with mains electricity or battery powered equipment being used where practicable
- Impose and signpost a maximum-speed-limit of 20 km/h haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated contractor and with the agreement of the local authority, where appropriate)

- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
- Use enclosed chutes and conveyors and covered skips
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods

Waste Management

- Avoid bonfires and burning of waste materials

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
- Only remove the cover in small areas during work and not all at once
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust

Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002).

- A speed restriction of 20 km/h will be applied as an effective control measure for dust for on-site vehicles
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. If sweeping using a road sweeper is not possible due to the nature of the surrounding area, then a suitable smaller scale street cleaning vacuum will be used.
- Avoid dry sweeping of large areas
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable
- Record all inspections of haul routes and any subsequent action in a site logbook
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable)

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than being an inefficient attempt to control them once they have been released. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues
- The development of a documented system for managing site practices with regard to dust control
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed
- The specification of effective measures to deal with any complaints received

18.5.2 OPERATIONAL PHASE MITIGATION MEASURES

No site-specific mitigation measures are proposed for the operational phase.

18.6 RESIDUAL EFFECTS

18.6.1 CONSTRUCTION PHASE RESIDUAL EFFECTS

To minimise dust emissions during construction, a series of mitigation measures have been prepared in accordance with IAQM Guidance (IAQM, 2024). These best practice measures will focus on the proactive control of dust and other air pollutants, aiming to minimise emissions at the source. Provided these measures are implemented as outlined, the residual air quality impacts during the construction phase are predicted to be short-term, direct, negative (adverse), localised, imperceptible, and non-significant.

Furthermore, the mitigation measures will ensure compliance with all EU ambient air quality legislative limit values, designed to protect human health (see Table 18.1). Therefore, the predicted residual dust-related impact on dust soiling, designated sites and human health during the construction phase of the Proposed Development is assessed as negative (adverse), direct, short-term, imperceptible, and non-significant.

18.6.2 OPERATIONAL PHASE RESIDUAL EFFECTS

There were no significant operational phase emissions due to the ORE Hub or supporting of the traditional port operations. Therefore, the likely effects during this phase will be localised, direct, long-term, neutral and imperceptible, which is overall not significant in EIA terms.

There will be indirect beneficial impacts to air quality from the generation of renewable electricity from the Proposed Development as the primary purpose of the development is to facilitate the construction and operation of offshore renewable energy generation. There will be NO_X emission savings which may otherwise have been generated from fossil fuels. This is an indirect, long-term, slight and positive effect on air quality.

18.7 MONITORING

Monitoring of construction dust deposition to nearby sensitive receptors, along the site boundary, during the construction phase of the Proposed Development, is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI (German VDI 2002). The Bergerhoff Gauge consists of a collecting container and a stand with a protective cage. The collecting container is secured to the stand, with its opening located approximately 2 m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days).

18.8 SUMMARY

This chapter of the EIAR has assessed the potential environmental impacts on air quality from the construction and operation phases of the Proposed Development. The assessment is summarised in Table 18.18.

Table 18.18: Assessment Summary

Potential Effect	Construction/ Operation	Beneficial / Adverse/ Neutral	Extent (Site/Local/National / Transboundary)	Short term/ Long term	Direct/ Indirect	Permanent / Temporary	Reversible / Irreversible	Significance of Effect (according to defined criteria)	Proposed mitigation	Residual Effects (according to defined criteria)
Impact of dust from earthworks, construction and trackout in terms of dust soiling, and human health effects	Construction	Adverse	Local	Short Term	Direct	Temporary	Reversible	Direct, localised, slight, negative (adverse) and short-term, (not significant)	Dust mitigation measures as set out in Section 18.5.1	Direct, localised, imperceptible, negative, short-term and not significant.
Impact of traffic	Construction	Neutral	Local	Short Term	Direct	Temporary	Reversible	Imperceptible and not significant.	Assessment scoped out due to no potential for significant effect, therefore no mitigation required.	Direct, localised, neutral, short-term, imperceptible and not significant.
Impact of traffic (potential future use of the Proposed Development to support traditional port operations)	Operation	Neutral	Local	Long Term	Direct	Permanent	Reversible	Direct, localised, slight, negative (adverse) and long-term, (not significant).	No site-specific mitigation proposed.	Direct, localised, slight, negative and long-term, (not significant).

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