Environmental Impact Assessment Report

NISA

North Irish Sea Array

Volume 5: Wider Scheme Aspects

Chapter 27
Air Quality

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27.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) presents an assessment of likely significant effects from the North Irish Sea Array (NISA) Offshore Wind Farm (hereafter referred to as the 'proposed development') in relation to Air Quality during the construction, operation and decommissioning phases.

This chapter sets out the methodology followed (Section 27.2), describes the baseline environment (Section 27.3) and summarises the main characteristics of the proposed development which are of relevance to air quality (Section 27.4). The evaluation of effects of the proposed development on air quality are described (Section 27.5). Measures are proposed to mitigate and monitor these effects (Section 27.6) and residual effects are described (Section 27.7). Transboundary effects are considered (Section 27.8). Cumulative effects are summarised in Section 27.9 and detailed in full in Chapter 38 Cumulative and Inter-Related Effects. The chapter concludes with a reference section (Section 27.10).

The EIAR also includes the following:

- Detail on the competent experts that have prepared this chapter is provided in Appendix 1.1 in Volume 8;
- Detail on the extensive consultation (including anything of relevance to air quality) has been undertaken with a range of stakeholders during the development of the EIAR is set out in Appendix 1.2; and
- A glossary of terminology, abbreviations and acronyms is provided at the beginning of Volume 2 of the EIAR.

A description of the proposed development is provided in Volume 2**,** Chapter 6: Description of the Proposed Development – Offshore (hereafter referred to as Offshore Description Chapter) and Volume 2, Chapter 7: Description of the Proposed Development – Onshore (hereafter referred to as Onshore Description Chapter). Details regarding the construction of the proposed development are provided in Volume 2, Chapter 8: Construction Strategy – Offshore (hereafter referred to as Offshore Construction Chapter) and Volume 2, Chapter 9: Construction Strategy – Onshore (hereafter referred to as Onshore Construction Chapter).

The following aspects are particularly relevant to the air quality assessment:

- Construction: Aspects relating to the construction of the proposed development, including mitigation measures to reduce potential dust impacts.
- Operation: Aspects relating to the operation and maintenance of the proposed development.
- Decommissioning: Aspects relating to decommissioning of the proposed development.

The potential effects of emissions of carbon due to the proposed development are considered in the context of Ireland's national climate change obligations, in Volume 5, Chapter 28: Climate.

27.2 Methodology

27.2.1 General

Air quality assessments are concerned with the presence of airborne pollutants in the atmosphere. The likely significant effects of the proposed development on air quality have been assessed by considering the background concentration levels of pollutants in the atmosphere and the potential for construction, operational and decommissioning (where relevant) effects associated with the proposed development.

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

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

- A detailed baseline air monitoring review has been undertaken in order to characterise the existing ambient environment in areas throughout the proposed development area, where available;
- A review of the most applicable standards and guidelines has been undertaken in order to define the air quality significance criteria for the construction, operational and decommissioning phases of the proposed development;
- A detailed assessment of the likely construction phase air quality impacts has been undertaken where sensitive receptors are located in proximity to the construction work areas;
- Predictive calculations have been performed to assess the potential air quality impacts associated with traffic alterations associated with the construction phase of the proposed development at the most sensitive locations;
- A schedule of mitigation measures has been incorporated where required, to reduce, where necessary, the identified potential air quality impacts associated with the proposed development and the potential residual effects quantified; and
- An assessment of potential cumulative impacts due to the construction and operation of developments in the vicinity.

27.2.2 Study Area

The study area for the air quality assessment is shown on Figure 27.1 and is focused on sensitive receptors in proximity to onshore construction works. According to the Institute of Air Quality Management (IAQM) guidance (2024), an assessment is normally required where there are sensitive receptors within 250m of the construction site and/or 50m of the route(s) to be used by construction vehicles on the public highway, up to 250m from the site entrance(s). Ecological receptors should be assessed within 50m of the boundary of the site and/or within 50m of the route(s) used by the construction vehicles on the public highway and up to 250m from the site entrance(s). These criteria define the study area for the assessment of construction phase pollution. Figure 27.1 also indicates the location of roads considered in the assessment of air quality impacts from diverted traffic during the construction phase.

The operational phase impacts are based on the national implications of pollutant reductions due to the proposed development.

Sensitive receptor locations are defined by the Transport Infrastructure Ireland (TII)[1] Standard as “residential properties, hospitals, schools, care homes, gardens of residential properties, hotels and B&Bs, places of worship, sports centres, shopping areas, playing fields, cyclist and outdoor locations including car parks, bus stations, including park and rides and railway stations” (TII, 2022) i.e., locations where members of the public are likely to be regularly present. The TII Standards define sensitive designated habitats as internationally, nationally and locally designated sites of ecological importance.

Given the location of the proposed onshore infrastructure (within the Greater Dublin Area), there are residential developments and schools, including ribbon and clustered developments, in the surrounds of the proposed development. A number of single residential properties and two beaches are located in proximity to the landfall site and the grid facility. The onshore cable route between the landfall site and the substation at Belcamp runs predominantly along the public road network.

There are also high numbers of industrial facilities located in proximity to the onshore cable route. Additionally, there are three areas of ecological sensitivity within 20m distance to the proposed development, refer to Section 27.2.5.3.

[1] TII Air Quality Assessment of Proposed National Roads – Standard (TII PE-ENV-01107) (TII 2022)

27.2.3 Relevant Guidance and Policy

27.2.3.1 Overview

The following Environmental Protection Agency (EPA) guidelines were considered in the preparation of this assessment:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) (EPA 2022).

The statutory ambient air quality standards in Ireland are outlined in the Ambient Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022) (hereafter referred to as the Air Quality Regulations), which incorporate the ambient air quality limits set out in 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 (hereafter referred to as the CAFE Directive), for a range of air pollutants. The statutory ambient air quality guidelines are discussed in greater detail in Section 27.2.3.2.

In addition to the specific statutory air quality standards, the assessment has made reference to national guidelines, where available, in addition to international standards and guidelines relating to the assessment of ambient air quality impact from road schemes. These are summarised below:

- Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (IAQM 2024)
- A guide to the assessment of air quality impacts on designated nature conservation sites (IAQM 2020)
- The TII Air Quality Assessment of Proposed National Roads – Standard (TII PE-ENV-01107) (TII 2022)
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes (hereafter referred to as the TII Ecological Guidelines) (TII 2009)
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission 2013)
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission 2017)
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) – LA 105 Air Quality (hereafter referred to as LA 105 Air Quality Guidance) (UKHA 2019); and
- World Health Organization (WHO) Global Air Quality Guidelines (2021)
- Clean Air Strategy (Government of Ireland) (2023).

27.2.3.2 Air Quality Standards (AQS)

In December 2022, the Air Quality Regulations 2022 came into force and transposed EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe into Irish law. The purpose of the Air Quality Regulations is to:

- Establish limit values and alert thresholds for concentrations of certain pollutants;
- Provide for the assessment of certain pollutants using methods and criteria common to other European member states;
- Ensure that adequate information on certain pollutant concentrations is obtained and made publicly available; and
- Provide for the maintenance and improvement of ambient air quality where necessary.

The limit values established under the Air Quality Regulations relevant to this assessment (pollutants of concern) are included in Table 27.1.

Table 27.1 Limit values in the Air Quality Regulations

Pollutant	Limit value for the protection of:	Averaging period	Limit value (µg/m^3)	Basis of application of limit value
NO_2 (Nitrogen Dioxide)	Human Health	1-hour	200	≤ 18 exceedances p.a. (99.79%ile)
		Calendar year	40	Annual mean
NOx (Oxides of Nitrogen)	Vegetation	Calendar year	30	Annual mean
PM_{10} (Particulate Matter)	Human Health	24-hours	50	≤ 35 exceedances p.a. (90%ile)
		Calendar year	40	Annual mean
$PM_{2.5}$ (Particulate Matter)	Human Health	Calendar year	25	Annual mean

In April 2023, the Government of Ireland published the new National Clean Air Strategy, a strategic policy framework to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines[2] (WHO 2021) Interim Target IT3 by 2026, IT4 targets by 2030 and the final targets by 2040 (shown in Table 27.2). The strategy 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*". Ireland will revise its air quality legislation in line with the proposed EU revisions to the CAFE Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets.

Table 27.2 WHO Air Quality Guidelines Levels (WHO 2021)

Pollutant	Averaging Time		Interim Targets (µg/m^3)			Final Target
		IT1	IT2	IT3	IT4	AQG Level
NO2	24-hour limit for protection of human health	120	50	-	-	25
	Annual limit for protection of human health	40	30	20	-	10
PM (as PM10)	24-hour limit for protection of human health	150	100	75	50	45
	Annual limit for protection of human health	70	50	30	20	15
PM (as PM2.5)	24-hour limit for protection of human health	75	50	37.5	25	15
	Annual limit for protection of human health	35	25	15	10	5

However, as the EU statutory limit values have not been updated since the release of the new WHO guidelines, the appropriate compliance limit values for the assessment of air quality impacts of the proposed development are those outlined in the Air Quality Regulations, which incorporate the cleaner air for Europe (CAFE) Directive. Therefore, the assessment considers compliance with the EU statutory limits only.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines, at European or national level, regarding the maximum dust deposition levels that may be generated during construction activities.

However, Verein Deutscher Ingenieure (VDI) German *Technical Instructions on Air Quality Control - TA-Luft* standard for dust deposition (VDI 2002) (non-hazardous dust) provides a guideline for the rate of dust deposition of 350 mg/m^2/day averaged over one year. The EPA concurs that this guideline may be applied, although the EPA typically applies the guideline limit as a 30-day average.

This guidance value can be implemented with regard to dust impacts from the construction of the onshore elements of the proposed development.

[2] WHO (2021) WHO Global Air Quality Guidelines. Available at: WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide

27.2.3.3 National Air Emission Targets

Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (hereafter referred to as the National Emissions Reduction Directive) was published in December 2016. The National Emissions Reduction Directive applied the limits set out in Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (hereafter referred to as the National Emission Ceiling Directive) until 2020 and established new national emission reduction commitments for various pollutants. The pollutants relevant to this assessment are NO_X and $PM_{2.5}$.

In relation to Ireland, the 2020 to 2029 emission targets are 65kt for NO_x (49% reduction on 2005 levels) and 10kt for $PM_{2.5}$ (18% reduction on 2005 levels) as shown in Table 27.3. In relation to 2030, Ireland's emission targets are 85% below 2005 levels for SO_2, 69% reduction for NO_x, 32% reduction for VOCs, 5% reduction for NH_3 and 41% reduction for $PM_{2.5}$, also shown in Table 27.3.

Table 27.3 National Air Emission Targets (Ireland's Air Pollutant Emissions 2020 to 2030)

Pollutant	2020 to 2029 Reduction Commitments (kilotonnes) (and % Reduction Compared to 2005 Levels)	2030 Reduction Commitments (kilotonnes) (and % Reduction Compared to 2005 Levels)
NO_x	66.8	40.6
	-49%	-69%
$PM_{2.5}$	15.6	11.2
	-18%	-41%

27.2.3.4 Transport Infrastructure Ireland (TII) and Institute of Air Quality Management (IAQM) Guidelines

This assessment has been undertaken with regard to the TII (2022) *Air Quality Assessment of Proposed National Roads - Standard* (TII Standard) and IAQM (2024) *Guidance on the assessment of dust from demolition and construction* (IAQM Guidance). These guidelines provide a methodology for the assessment, management and mitigation of air quality which can be adapted accordingly depending on the nature of the works.

The TII standard states that the change in Annual Average Daily Traffic (AADT) flows of less than 1,000 or heavy-duty vehicle (HDV) flow change of less than 200 AADT during the operational and construction phases are unlikely to result in significant air quality effects. Likely significant effects on air quality are therefore assessed when the AADT flows are projected to increase above these thresholds due to the construction and/or operation of the proposed development. As minimal traffic movements will occur due to the proposed development during the operational phase (refer to Section 24.5.3 of Chapter 25 Traffic & Transport), no significant operational phase traffic impacts are predicted to arise and no further assessment is provided.

The TII Road Emissions Model (REM) tool has been used to predict the potential changes in air quality due to projected AADT variations during the construction phase on the link roads which are predicted to experience an increase in traffic (as AADT) greater than 1,000 or HGV increase of greater than 200 AADT. The tool allows for the calculation of vehicle emissions using emission factors from the European Environment Agency (EEA) Air Pollutant Emission Inventory Guidebook. The two air quality parameters considered relevant to traffic emissions are NO_2 and PM_{10}.

27.2.3.5 National Marine Planning Framework

The key National Marine Planning Framework (NMPF) policy points that are applicable to the assessment of air quality is summarised in Table 27.4. NMPF policies are addressed in their entirety in Appendix 3.1: NMPF Compliance Report.

Table 27.4 NMPF Policy Points of Relevance to Air Quality

NMPF Policy Point	Policy Description	Where addressed
Air Quality 1	Proposals that support a reduction in air pollution should be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must demonstrate consideration of their contribution to air pollution, both direct and cumulative.	The proposed development is an offshore wind energy project which will reduce Ireland's dependence on fossil fuel use. Likely significant effects of the construction phase of the proposed development on air quality are described in Section 27.5. The assessment of the operational phase of the proposed development concluded that there will be a positive, moderate and permanent residual effect on air quality in Ireland in Section 27.7.
Air Quality 2	Where proposals are likely to result in or facilitate an increase in air pollution, proposals should demonstrate that they will, in order of preference in accordance with legal requirements and standards: a) avoid, b) minimise, or c) mitigate air pollution.	Likely significant effects of the construction phase of the proposed development on air quality are described in Section 27.5. The mitigation measures to reduce likely significant effects are described in Section 27.6. Section 27.7 notes that there are no significant residual effects on air quality in EIA terms.

27.2.4 Data Collection and Collation

A desk-based study of the baseline environment of the proposed development area was undertaken in order to inform this assessment. The following Environmental Protection Agency (EPA) Air Quality Reports were referred to:

- Environmental Protection Agency (2021). Air Quality in Ireland 2020- Indicators of Air Quality
- Environmental Protection Agency (2020). Air Quality in Ireland 2019- Indicators of Air Quality; and
- Environmental Protection Agency (2019). Air Quality in Ireland 2018- Indicators of Air Quality.

27.2.5 Assessment Methodology

27.2.5.1 Overview

The air quality assessment has been carried out in accordance with the EPA Guidelines and having regard to the generic significance criteria included in that document, refer to Volume 2, Chapter 2: EIA and Methodology for the preparation of an EIAR. The methodology for this assessment topic is informed by existing best practice and experience on other infrastructure projects.

The proposed development comprises of a combination of offshore infrastructure and onshore infrastructure, and other supporting infrastructure, ancillary works and activities. Construction of the offshore infrastructure is unlikely to result in significant impacts to air quality as a portion of construction works will take place subsea, with little opportunity for dust generation. In addition, the offshore infrastructure of the proposed development is located in a vast body of water and so, any potential airborne pollutants produced are likely to be dispersed widely resulting in no adverse effects. Emissions that may arise from offshore construction vessels is expected to be minimal due to the irregular nature of the use and the vessels' ability to transfer large loads at any one time. The use of helicopters is expected to be minimal and only in the event of an emergency. As such, the potential offshore construction phase aspects of the project both on onshore and offshore receptors are not considered further in this chapter.

Impacts to air quality will be exclusively concerned with the construction, maintenance and decommissioning periods associated with the onshore infrastructure of the proposed development.

Both onshore and offshore aspects are considered in the assessment of operational phase impacts as they relate to the project as a whole.

27.2.5.2 Construction Traffic Significance Criteria

The air quality assessment utilises the traffic data provided in Volume 4, Chapter 24: Traffic and Transportation to assess the likely significant effects on air quality of construction traffic accessing the construction sites.

Significance criteria have been adopted from the TII Standard and are presented in Table 27.5 These criteria provide a basis for assessing the level of effects due to the additional traffic present during construction. These criteria align with EPA guidance where the following is assumed:

- Neutral = imperceptible and not significant
- Slight = slight
- Moderate = moderate
- Substantial = significant, very significant, profound.

On the basis of the TII Standard and the EPA guidance, only a substantial impact in TII terms results in a significant impact in EIA terms.

Table 27.5 Definition of impact magnitude for changes in ambient pollutant concentrations (Source: TII Standard)

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

27.2.5.3 Construction Phase Activities

For the construction phase activities assessment, the focus is on air quality sensitive receptors located within the study area, refer to Section 27.2.2, that are susceptible to dust impacts. As such, the greatest potential impact on air quality during the construction phase is from construction dust emissions, PM_{10} / $PM_{2.5}$ emissions and the potential for nuisance dust.

The construction effects have been assessed using the qualitative approach described in the latest IAQM guidance, as detailed in Section 27.2.3.4. The guidance applies to the assessment of dust from construction and demolition activities. However, no demolition activities are required during the construction phase of the proposed development, as such dust emission from demolition activities will not be further assessed.

An ‘impact’ is described as a change in pollutant concentrations or dust deposition, while an ‘effect’ is described as the consequence of an impact. The main impacts that may arise during construction of the proposed development are:

- Dust deposition, resulting in the soiling of surfaces
- Visible dust plumes
- Elevated PM_{10} concentrations as a result of dust generating activities on site; and
- An increase in NO_2 and PM_{10} concentrations due to exhaust emissions from non-road mobile machinery and vehicles accessing the site.

The IAQM guidance considers the potential for dust emissions from dust-generating activities, such as earthworks, construction of new structures and track-out.

Earthworks refer to the processes of soil stripping, ground levelling, excavation and land capping, while track-out is the transport of dust and dirt from the site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the site with dusty materials, which may then spill onto the road, or when they travel over muddy ground on site and then transfer dust and dirt onto the road network.

For each of these dust-generating activities, the guidance considers three separate effects: annoyance due to dust soiling; harm to ecological receptors; and the risk of health effects due to a significant increase in PM_{10} exposure. The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and PM_{10} exposure.

The methodology takes into account the scale to which the above effects are likely to be generated (classed as small, medium or large), along with the levels of background PM_{10} concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area. This is then taken into consideration when deriving the overall risk for the site and the resultant likely significance of effects. Suitable mitigation measures are proposed to reduce the risk for the site and the corresponding impact of construction works. Image 27.1 outlines the steps to be undertaken, as per the IAQM guidance.

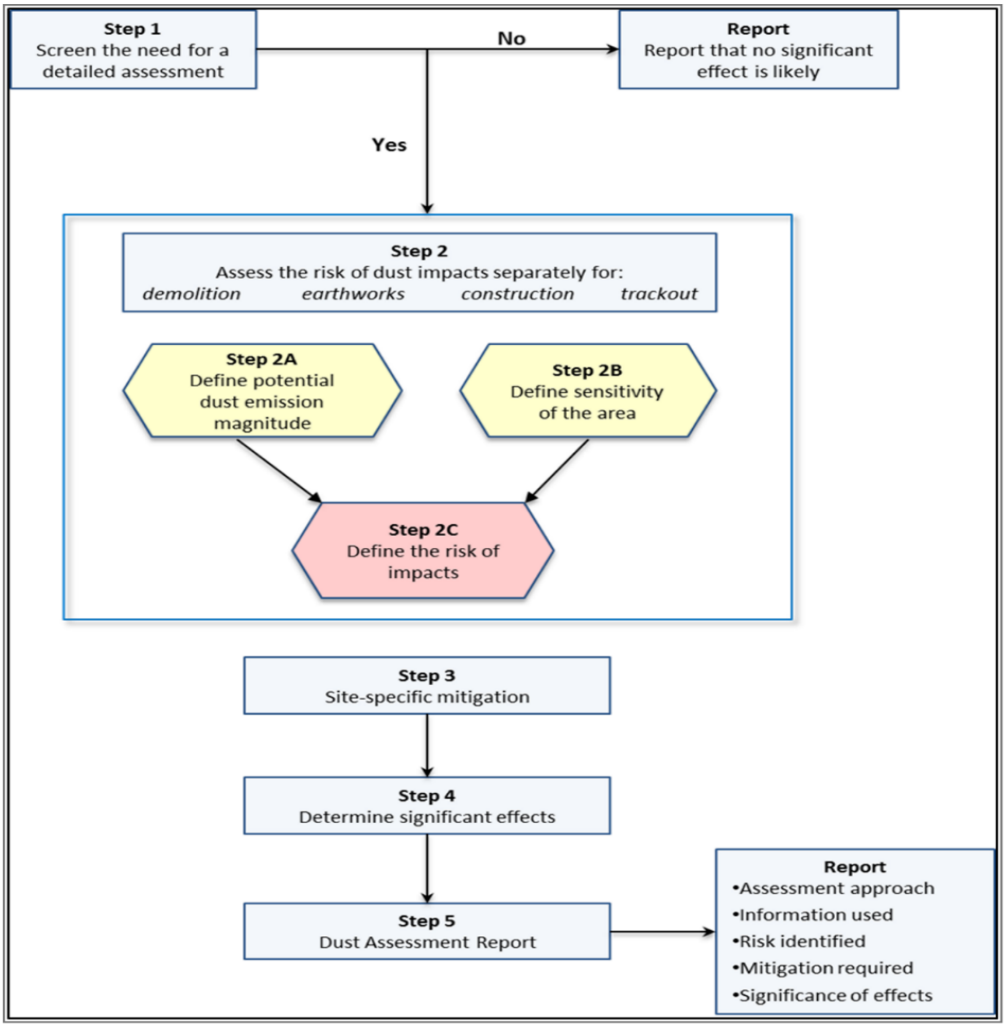

Image 27.1 Steps to undertaking dust assessment (Source: IAQM Guidance)

Step 1 Screen need for assessment:

The first step is the initial screening to determine whether a detailed assessment is required. According to the IAQM guidance, an assessment is required where there are sensitive receptors within 250m of the proposed development, for ecological receptors within 50m of the proposed development and/or within 50m of the route(s) used by the construction vehicles on the public highway and up to 500m from the site entrance(s).

There are ecological sensitive receptors within 50m of the boundary of the site and/or within 50m of the route(s) used by the construction vehicles on the public highway and up to 250m from the site entrance(s). So therefore an assessment of the air quality effects was required. There are also areas of ecological sensitivity within 50m distance to the proposed development (as per the above thresholds) as follows, refer to Figures 23.11 to 23.16 of Volume 7:

- Malahide Estuary SPA (Site code 004025)
- Malahide Estuary SAC (Site code 000205);
- Malahide Estuary pNHA (Site code 000205);
- Rogerstown Estuary SAC (Site code 000208);
- Rogerstown Estuary pNHA (Site code 000208);
- Rogerstown Estuary SPA [(Site code 004015); and
- North West Irish Sea cSPA (Site code 004236).

Step 2 Assess the risk of dust impacts:
This step is split into three sections as follows:

- A - Define the potential dust emission magnitude;
- B - Define the sensitivity of the area; and
- C - Define the risk of impacts.

Each of the dust-generating activities is given a dust emission magnitude depending on the scale and nature of the works (Step 2A) based on the criteria shown in Table 27.6.

Table 27.6 Categorisation of dust emission magnitude (Source: IAQM Guidance)

Dust Emission Magnitude		
Small	**Medium**	**Large**
Demolition		
Total building volume <12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.	Total building volume 12,000m^3 – 75,000m^3, potentially dusty construction material, demolition activities 6-12m above ground level.	Total building volume >75,000m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12m above ground level.
Earthworks		
total site area <18,000m^2 soil type with large grain size (e.g., sand) <5 heavy earth moving vehicles active at any one time formation of bunds <3m in height.	total site area 18,000m^2 - 110,000m^2 moderately dusty soil type (e.g., silt) 5 – 10 heavy earth moving vehicles active at any one time formation of bunds 3 - 6m in height.	total site area >110,000m^2 potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size) >10 heavy earth moving vehicles active at any one time formation of bunds >6m in height.
Construction		
total building volume <12,000m^3 construction material with low potential for dust release (e.g., metal cladding or timber).	total building volume 12,000 - 75,000m^3 potentially dusty construction material (e.g., concrete) on-site concrete batching.	total building volume >75,000m^3 on-site concrete batching, Sandblasting.

Dust Emission Magnitude		
Trackout		
<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.	20 – 50 HDV (>3.5t) outward movements in any one day moderately dusty surface material (e.g., high clay content) unpaved road length 50 – 100m.	>50 HDV (>3.5t) outward movements in any one day potentially dusty surface material (e.g., high clay content) unpaved road length >100m.

The sensitivity of the surrounding area is determined (Step 2B) for each dust effect from the above dust-generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local PM10 background concentrations and any other site-specific factors. Definitions of sensitivity are provided due to soiling and health based on IAQM guidance (2024):

Sensitivities of People to Dust Soiling Effects

High sensitivity receptor – surrounding land where:

- Users can reasonably expect enjoyment of a high level of amenity; or
- The appearance, aesthetics or value of their property would be diminished by soiling; and
- The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.
- Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.

Medium sensitivity receptor:

- Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or
- The appearance, aesthetics or value of their property could be diminished by soiling; or
- The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.
- Indicative examples include parks and places of work.

Low sensitivity receptor:

- The enjoyment of amenity would not reasonably be expected; or
- Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or
- There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.
- Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Sensitivities of People to the Health Effects of PM10

High sensitivity receptor:

- Locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
- Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.

Medium sensitivity receptor:

- Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
- Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM10, as protection is covered by Health and Safety at Work legislation.

Low sensitivity receptor:

- Locations where human exposure is transient.
- Indicative examples include public footpaths, playing fields, parks and shopping streets.

Sensitivities of the Area to Ecological Impacts

High sensitivity receptor

- Locations with an international or national designation and the designated features may be affected by dust soiling; or
- Locations where there is a community of a particularly dust sensitive species.
- Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.

Medium sensitivity receptor

- Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or
- locations with a national designation where the features may be affected by dust deposition.
- Indicative example is a Site Scientific Interest (SSSI) with a dust sensitive features.

Low sensitivity receptor

- Locations with a local designation where the features may be affected by dust deposition.
- Indicative example is a local Nature Reserve with dust sensitive features.

Table 27.7, 27.8 and 27.9 show the criteria for defining the sensitivity of the area to different dust effects.

The health effects of PM_{10} on high sensitivity receptors such as residential areas, residential properties, schools and residential care homes which are in close proximity to the proposed development.

Table 27.7 Sensitivity of the area to human health impacts (Source: IAQM Guidance)

Background PM_{10} concentrations (annual mean)	Number of receptors	Distance from the source (m)			
		< 20	< 50	< 100	< 250
High receptor sensitivity					
> 32µg/m^3	> 100	High	High	High	Medium
	10 – 100			Medium	Low
	< 10		Medium	Low	
28 – 32µg/m^3	> 100	High	High	Medium	Low
	10 – 100		Medium	Low	
	< 10				
24 – 28µg/m^3	> 100	High	Medium	Low	Low

Background PM_{10} concentrations (annual mean)	Number of receptors	Distance from the source (m)			
		< 20	< 50	< 100	< 250
	10 – 100				
	< 10	Medium	Low		
< 24µg/m^3	> 100	Medium	Low	Low	Low
	10 – 100	Low			
	< 10				
Medium receptor sensitivity					
> 32µg/m^3	> 10	High	Medium	Low	Low
	1 – 10	Medium	Low		
28 – 32µg/m^3	> 10	Medium	Low	Low	Low
	1 – 10				
24 – 28µg/m^3	> 10	Low	Low	Low	Low
	1 – 10				
< 24 µg/m^3	> 10	Low	Low	Low	Low
	1 – 10				
Low receptor sensitivity					
< 24µg/m^3	> 1	Low	Low	Low	Low

Table 27.8 Sensitivity of the area to dust soiling effects on people and property (Source: IAQM Guidance)

Receptor sensitivity	Number of receptors	Distance from the 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

Table 27.9 Sensitivity of the Area to Ecological Impacts

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

The overall **risk of the impacts for each activity** is then determined (Step 2C) prior to the application of any mitigation measures (defined in Table 27.10) and an overall risk for the site is derived.

Table 27.10 Risk of dust impacts (Source: IAQM Guidance)

Sensitivity of area	Dust Emission Magnitude		
	Large	Medium	Small
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

In order to determine the level of dust mitigation required during the construction phase, the potential dust emission magnitude for each dust generating activity is taken into account, along with the already established sensitivity of the area. On this basis, the significance of the potential impact is determined.

27.2.5.4 Operational Phase

For the operational phase, assessment of the dust impacts from maintenance of the proposed development have low potential for dust release and are likely to have a negligible impact on air quality sensitive receptors.

Given there is no projected increase in AADT flows of more than 1,000 or HDV flow increase of more than 200 AADT during the operational phase, no detailed assessment is required based on the TII Standard, refer to Section 25.2.3.

Overall, the operational phase of the proposed development is unlikely to result in significant negative effects to air quality. Instead, it is likely to generate positive impacts to air quality due to the implementation of wind powered renewable energy and the displacement of burning of fossil fuels. The potential positive impacts on national air quality are calculated based on data provided in the EPA report on Ireland's Environment – An Integrated Assessment 2020. The data included in Table 27.11 based on data provided in Table 12.1 of the EPA report, is used in the assessment to determine the likely emissions displacement due to the use of wind energy compared to fossil fuel use. The energy use is based on 2018 data, totalled at 170,214MWhr.

The capacity factor is applied to take into account the intermittent nature of wind, the availability of wind turbines and array losses etc. A conservative capacity factor of 46% is assumed for the proposed development.

Table 27.11 Pollutant emissions per fossil fuel energy use in 2018 in Ireland

Fuel type	$PM_{2.5}$ emissions (kt)	NO_x emissions (kt)
Liquid fuels	2.43	56.7
Solid fuels	63.1	8.7
Natural gas	1.4	11.4

27.3 Baseline Environment

The Environmental Protection Agency (EPA) Air Quality in Ireland Reports describes the air quality zoning adopted in Ireland under the Air Quality Standards Regulations, 2011 as follows:

- Zone A (Dublin conurbation)
- Zone B (Cork conurbation)
- Zone C (24 Cities and towns); and
- Zone D (Rural Ireland: areas not in Zones A, B and C)

The site falls within Zones A, C and D. Background pollutant levels from 2021, 2020, 2019 and 2018 air quality monitoring of NO_2, NO_x, $PM_{2.5}$ and PM_{10} are listed for Zone A, C and D, as provided by the EPA, and are presented in Table 27.12 to Table 27.14.

A desk study of the EPA air quality monitoring programmes has been undertaken. Concentrations of each pollutant recorded in Zone A, C and D are averaged to represent typical background levels. Average concentrations were obtained from all stations where 90% data capture was achieved. This is in accordance with Directive 2008/50/EC which specifies that any site used for assessment purposes must comply with 90% data capture.

The landfall site including the grid facility are located (at least partially) in Zone C, whereas the northern end of the onshore cable route is located in Zone D and the southern end and connection into the existing 220kV substation at Belcamp is located within Zone A, refer to Image 27.3.

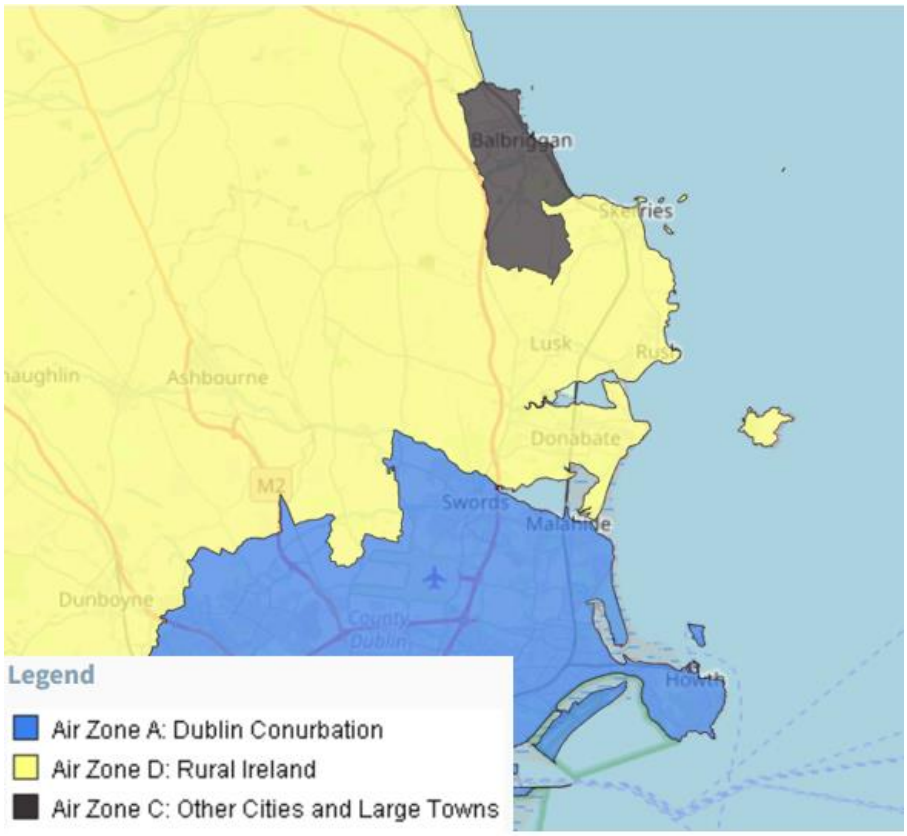

Image 27.1 Air quality zones

The most recent annual report on air quality, Air Quality in Ireland 2022 (EPA 2023) details the range and scope of monitoring undertaken throughout Ireland.

The continuous monitoring data from EPA monitoring stations in Zone A is outlined in Table 27.12 which presents a five-year maximum of background pollutant concentration values for NO_2, NO_x, $PM_{2.5}$ and PM_{10}.

Table 27.12 Annual Mean Background Pollutant Concentrations for Zone A

Year	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average $PM_{2.5}$ ($\mu g/m^3$)	Annual Average NO_x ($\mu g/m^3$)
Limit	**40 µg/m³**	**40 µg/m³**	**25 µg/m³**	**30 µg/m³**
2018	24.8	14.1	7.6	39.0
2019	27.1	14.5	9.2	60.0
2020	17.4	13.1	7.6	39.0
2021	20.4	12.7	7.7	39.2
2022	20.3	13.5	7.7	40.7
Maximum	27.1	14.5	9.2	60

The background concentrations are within the air quality standards for all pollutants in Zone A, except for NO_x which exceeded its Air Quality limit.

The continuous monitoring data from EPA monitoring stations in Zone C is outlined in Table 27.13 which presents a five-year maximum of background pollutant concentration values for NO_2, NO_x, $PM_{2.5}$ and PM_{10}.

Table 27.13 Annual Mean Background Pollutant Concentrations for Zone C

Year	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average $PM_{2.5}$ ($\mu g/m^3$)	Annual Average NO_x ($\mu g/m^3$)
Limit	**40 µg/m³**	**40 µg/m³**	**25 µg/m³**	**30 µg/m³**
2018	10.3	14.0	8.3	14.7
2019	12.0	16.3	12.2	25.4
2020	11.4	14.4	9.5	21.6
2021	11.6	13.1	8.8	22.7
2022	11.9	13.3	9.5	21.6
Maximum	12	16.3	12.2	25.4

The background concentrations are well within the air quality standards for all pollutants in Zone C.

The continuous monitoring data from EPA monitoring stations in Zone D is outlined in Table 27.14 which presents a five-year average of background pollutant concentration values for NO_2, NO_x, $PM_{2.5}$ and PM_{10}.

Table 27.14 Annual Mean Background Pollutant Concentrations for Zone D

Year	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average $PM_{2.5}$ ($\mu g/m^3$)	Annual Average NO_x ($\mu g/m^3$)
Limit	**40 µg/m³**	**40 µg/m³**	**25 µg/m³**	**30 µg/m³**
2018	4.7	11.8	9.4	6.7
2019	5.7	14.3	9.3	7.8
2020	7.6	11.2	7.8	15.9
2021	7.5	11.9	8.7	14.2

Year	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average $PM_{2.5}$ ($\mu g/m^3$)	Annual Average NO_x ($\mu g/m^3$)
Limit	**40 µg/m³**	**40 µg/m³**	**25 µg/m³**	**30 µg/m³**
2022	7.4	12.7	8.4	14
Maximum	7.6	14.3	9.3	15.9

The background concentrations are within the air quality standards for all pollutants in Zone D.

27.4 Characteristics of the Proposed Development

The proposed development includes the construction of an offshore windfarm off the coast of counties Dublin, Meath and Louth and its subsequent connection to an existing 220kV substation at Belcamp, Swords, Co. Dublin.

The following activities are considered major aspects of the onshore construction works that are relevant to the air quality assessment:

- Construction activities at the landfall site and the grid facility;
- Horizontal directional drilling (HDD) at the landfall site, railway line, M1, and watercourse and bridge crossings; and
- Open cut trench activities.

The locations and type of temporary construction compounds are described in Chapter 9: Construction Strategy - Onshore.

27.5 Potential Effects

27.5.1 Do-Nothing Scenario

In the scenario where the proposed development did not proceed, none of the construction or operational effects set out in this chapter would occur, both positive and negative. However, the overall potential effect of the do-nothing scenario is considered to be slight adverse as the likely reduction in fossil fuel emissions would not occur.

27.5.2 Construction Phase

There is potential for direct and indirect impacts to arise during the construction phase. Direct effects are likely due to construction phase activities. Indirect effects relate to the offsite impacts associated with construction traffic accessing the site for deliveries, removals and staff.

27.5.2.1 Direct Effects

Dust emissions are likely to arise from the following activities:

- Site clearance
- Utility diversions
- Foundation construction
- Site excavation
- Open-cut trench methods
- HDD operations
- Use of generators

- Stockpiling of excavated materials
- Handling of construction materials; and
- Construction traffic movements.

Dust Emission Magnitude

As outlined in Section 27.2.5.3, the IAQM guidance was used to assess the potential air quality impacts on sensitive receptors during the construction phase.

Following the methodology outlined in Section 27.2.5.3, each dust generating activity has been assigned a dust emission magnitude as shown in Table 27.15.

Table 27.15 Dust Emission Magnitude for Construction Activities

Activity	Dust emission magnitude	Reasoning
Earthworks	Large	Total site area >10,000 m^2
Construction	Medium	Potentially dusty construction material
Track-out	Large	>50 HDV (>3.5t) outward movements in any one day

Sensitivity of the Area

The sensitivity of the study area to dust soiling has been assigned as high, due to the number of sensitive receptors within proximity of dust generating activities.

The sensitivity of the area to human health effects has been assigned as medium as the background PM_{10} concentration for all the three zones (A, C, and D) is less than the lower concentration of 24µg/m^3 outlined in Table 27.16 and the high number of sensitive receptors in proximity to the works (greater than 100 receptors within 20m).

The sensitivity of the area to ecological receptors has been assigned as high, due to the number of designated sites within 20m distance from dust generating activities, refer to Section 27.2.5.3.

The overall sensitivity has been summarised as shown in Table 27.16.

Table 27.16 Sensitivity of the area

Potential Impact	Sensitivity
Dust Soiling	High
Human Health	Medium
Ecological	High

Risk of Impacts

Taking into consideration the dust emission magnitude and the sensitivity of the area, the risk of dust impacts is presented in Table 27.17.

Table 27.17 Risk of dust impacts

Potential Impact	Risk		
	Earthworks	**Construction**	**Track-out**
Human Health	Medium	Medium	Medium
Dust Soiling	High	Medium	High
Ecological	High	Medium	High

The risk of dust impacts is assigned, as shown in Table 27.17 prior to the implementation of mitigation measures. On this basis, the direct impact on air quality during the construction phase has the potential to be negative, significant, and short-term in proximity to the works. Specific mitigation is described in Section 27.6.

27.5.2.2 Indirect effects

The predicted change in NO_2 and PM_{10}, due to the changes in construction phase AADT are presented in Table 27.18 for the nearest sensitive receptor on each affected link (assumed to be 10m from the centre line).

Three links are projected to result in an increase of HGV of greater than 200 (AADT), however, only one link has sensitive receptors in proximity, i.e., R132. As this link is located in Zone C, this background data is applied. Predicted concentrations of PM_{10} and NO_2 are provided.

Table 27.18 Predicted change in AADT and associated change in NO_2 and PM_{10} concentrations

Link	Predicted change in HDV	Predicted change in NO_2 annual concentrations ($\mu g/m^3$) at nearest receptor	Total NO_2 annual concentrations ($\mu g/m^3$) (background + predicted)	Predicted change in PM_{10} annual concentrations ($\mu g/m^3$) at nearest receptor	Total PM_{10} annual concentrations ($\mu g/m^3$) (background + predicted)
R132	572	0.17	18.8	0.2	23

Predicted concentrations are in compliance with air quality standards. Based on the significance criteria outlined in Table 27.5, a neutral and short-term impact is predicted to occur due to construction phase traffic.

Rogerstown Estuary SAC is located in proximity to the R132. Predicted concentrations of NOx are presented in Table 27.19.

Table 27.19 Predicted change in AADT (HDV) and associated change in NO_x concentrations

Link	Predicted change in HDV	Predicted change in NO_x annual concentrations ($\mu g/m^3$) at SAC	Total NO_x annual concentrations ($\mu g/m^3$) (background + predicted)
R132	572	0.2	14

Predicted concentrations are in compliance with air quality standards. Based on the significance criteria outlined in Table 27.5, a neutral and short-term impact is predicted to occur on NO_x concentrations due to construction phase traffic at the nearest affected ecologically sensitive site. Due to the minimal change in nitrogen oxides concentrations, no further assessment of ammonia or nitrogen deposition is required.

In addition, a number of road diversions will occur during the construction phase as a result of road closures to accommodate works, refer to Table 27.20. The R132 and Flemington Lane are predicted to result in the maximum total AADT and change in AADT respectively. The impact rating is developed based on criteria provided in Table 27.5 on the basis that existing air quality is 75% or less of the air quality standard.

Table 27.20 Predicted maximum change in AADT (and total AADT) and associated change in pollutant concentrations

Link	Predicted maximum change in AADT (total AADT)	Pollutant	Predicted total annual concentrations ($\mu g/m^3$) including background	Predicted % change in annual concentrations (%)	Impact rating
R132	9,974 (60,007)	NO_2	25.2	2.2	Neutral
		PM_{10}	18.3	5.8	Slight
Flemington Lane	10,540 (12,116)	NO_2	21.6	13.6	Moderate
		PM_{10}	16.8	5.5	Slight

There is a potential for a maximum impact rating of moderate adverse and temporary effects to occur at the most affected receptors (6m from the road edge). However, this assessment is based on continuous maximum traffic flows over the period of a full year for the purposes of comparison with air quality standards. In reality, the duration of the air quality effects will be for a maximum period of four weeks. Refer to Section 24.5 for further details.

27.5.3 Operational Phase

27.5.3.1 Direct Effects

Two standby diesel generators, which will likely be 2MVA in size, will be located at the grid facility. These generators will be used in the event that normal auxiliary supply is lost.

It is expected that the usage of the generators will be limited to routine testing. Given the irregular operation, no significant effects are envisaged.

The operational phase of the proposed development will result in a positive impact on air quality due to the offset of emissions through the use of wind power. An estimation of the likely emission reductions is outlined in Table 27.21 based on the data provided in Table 27.15 and compared to the commitments outlined in Table 27.3.

Table 27.21 Projected emissions savings during operational phase

Pollutant	Savings (kt)	2030 commitment (kt)	% of savings relative to 2030 commitment
$PM_{2.5}$	0.02	11.2	0.2
NO_x	0.18	40.6	0.4

The results of the assessment demonstrate that the proposed development will have a positive, moderate, and long-term impact on air quality during the operational phase.

27.5.3.2 Indirect Effects

There will be no significant change in traffic volumes during the operational phase and no significant adverse operational air emissions sources. Therefore, no indirect adverse air quality effects are predicted during the operational phase.

27.5.4 Decommissioning

Once the proposed development has reached the end of its operational life, a decision will be made on whether it will be decommissioned. In the event the proposed development is decommissioned a Decommissioning Plan and Programme will be prepared by the developer in consultation with ABP / Maritime Area Regulatory Authority (MARA) / relevant stakeholders as required. It is anticipated that the decommissioning process will involve similar activities to the construction process.

The Bremore substation and underground onshore cable will not be decommissioned as these will form part of the wider National Electricity Transmission Network (NETN).

Dust generated by the decommissioning activities including the potential removal of the compensation substation will be similar to many of the construction activities, although of smaller extent and intensity/duration. The activity will be focused at the grid facility site and the impacts will be less than for construction activities in Section 27.5.2. Therefore, a negative, slight and short-term impact is expected in proximity to the works.

27.6 Mitigation and Monitoring Measures

Appropriate mitigation and monitoring measures are proposed to minimise the direct, indirect, and cumulative effects of the proposed development. These are detailed below.

27.6.1 Construction Phase

27.6.1.1 Construction Phase Mitigation Measures

The following mitigation measures will be implemented for the construction phase of the proposed development, in order to reduce the dust risk and impacts associated with the construction, earthworks and track-out as per IAQM guidance.

Mitigation for all working areas

- A Community Liaison Plan that includes community engagement before work commences on site will be developed. The proposed procedures for community liaison and engagement relating to Air Quality are set out in Volume 10, Appendix 9.1: Onshore Construction Environmental Management Plan.
- The Contractor will hold regular liaison meetings with other construction sites within 500m of the proposed development boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised when works are occurring concurrently.

Site Management

- Record all dust and air quality incidents, complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

Preparing and maintaining the site

- Plan construction compound layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect a 2m minimum site hoarding around all construction/ contractor compounds.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Cover, seed or fence stockpiles to prevent wind whipping.

Construction Plant Operations

- Ensure an adequate water supply on the working areas for effective dust/particulate matter suppression/mitigation.

Use enclosed chutes where possible 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 and spill kits are 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.
- 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.

Measures specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures specific to Track-out

- Ensure no mud or debris accumulates on the public road and public roads are clean of any mud, dust or debris by suitable means. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.
- Ensure vehicles entering and leaving sites are covered when transporting materials that are likely to generate dust to prevent escape during transport.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Measures specific to the grid facility construction activities

- Dust generation and dermal exposure during site construction works will be controlled by appropriate dust control measures e.g., water sprays and appropriate personal protective equipment (PPE).
- Where the asphalt layer is removed at the grid facility site this will occur in a phased basis and will be replaced with granular hardcore as soon as possible to prevent the generation of windblown dust.

Measures to be applied at the Malahide Estuary

- Erect a 2m minimum site hoarding around the working areas adjacent to the Malahide Estuary (Estuary Road) and where works are in proximity to the North West Irish Sea cSPA.

27.6.1.2 Construction Phase Monitoring Measures

The following monitoring measures, will be implemented for the construction phase of the proposed development:

- The contractor will undertake on-site and off-site inspection, where receptors are nearby, visually inspect dust levels, and make the log available to Dublin City Council and Fingal County Council on request. The frequency of the inspections will be increased during site activities with a high potential to produce dust are being carried out, such as during excavation activities during dry periods.
- Dust monitoring will be undertaken at the three nearest sensitive receptors within 250m (with agreement from the landowner) of major works at the landfall site and the grid facility; and
- The TA Luft dust deposition limit values of 350 mg/m^2/day applied as a 30-day average.

Operational Phase

There are no significant adverse effects to air quality predicted during the operational phase, therefore, no specific operational phase mitigation or monitoring measures are required.

Decommissioning

The mitigation measures specified for the construction phase as detailed in Section 27.6.1.1 will be applied during the decommissioning phase.

27.7 Residual Effects

With the implementation of the mitigation and monitoring measures outlined in Section 27.6, no significant adverse residual effects on air quality are envisaged during the construction, operation or decommissioning of the proposed development.

27.7.1 Construction Phase

Table 27.22 provides a summary of the residual effects predicted for the construction phase following the implementation of mitigation measures. The construction mitigation measures proposed are based on IAQM guidance and are considered robust and effective in minimising offsite dust effects.

Table 27.22 Summary of Construction Residual Effects

Assessment Topic/Receptor	Potential Effect (Pre-Mitigation)	Predicted Effect (Post-Mitigation)
Construction activities	Negative, Significant and Short term	Negative, Slight and Short term
Construction traffic	Negative, Moderate and Temporary	Negative, Moderate and Temporary

27.7.2 Operational Phase

Table 27.23 provides a summary of the residual effects predicted for the operational phase.

Table 27.23 Summary of Operational Residual Effects

Assessment Topic/Receptor	Potential Effect (Pre-Mitigation)	Predicted Effect (Post-Mitigation)
National emissions	Positive, moderate and permanent	Positive, moderate and permanent

27.7.3 Decommissioning

The mitigation and monitoring measures, described for the construction phase, updated to reflect best practice at the time, will be implemented for the decommissioning phase.

Where possible, removed material will be reused and quantities of waste minimised, reducing the emissions associated with the proposed development. The construction activities required during the decommissioning phase will be considerably less than the construction phase, and thus there are no significant effects to air quality expected.

27.8 Transboundary Effects

No significant adverse impacts on air quality are likely to arise and therefore no significant adverse transboundary effects are predicted to occur.

27.9 Cumulative Effects

A long list of projects which were deemed to be potentially relevant to be included in the cumulative impact assessment was compiled (see Volume 6, Chapter 38: Cumulative and Inter-related Effects (hereafter referred to as the 'Cumulative and Interrelated Effects Chapter')). A screening exercise of the "long list" was carried out in order to determine whether each of those other projects have the potential to give rise to likely significant cumulative effects from an Air Quality perspective with the proposed development. Many of the other projects were screened out for a number of reasons including the location, scale and nature of the project. Those projects which were "screened in" were carried forward for assessment. The results of the assessment are presented in the Cumulative and Interrelated Effects chapter. The assessment concluded that no likely adverse significant cumulative effects on air quality are predicted during the construction, operation or decommissioning phases of the proposed development. Cumulatively with other Phase One offshore energy projects, a positive moderate and long-term impact will arise during the operational phase on air quality due to the reduction in pollution from non-renewable power generation.

27.10 References

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