Chapter 23:
Air Quality

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

A TETRA TECH COMPANY

PARK WIND
JERA GROUP

Energy for generations

ORIEL WIND FARM PROJECT

Environmental Impact Assessment Report
Chapter 23: Air Quality

MDR1520B
EIAR – Chapter 23
A1 C01
March 2024

Contents

Tables

Figures

23 CHAPTER 23 – AIR QUALITY

23.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment on the potential impacts of the Oriel Wind Farm Project (hereafter referred to as "the Project") on air quality. Specifically, this chapter considers the potential impact of both the onshore and offshore infrastructure of the Project to air quality during the construction, operational and maintenance, and decommissioning phases.

The assessment presented is informed by the following technical chapters:

- Chapter 17: Climate;
- Chapter 18: Population and Human Health; and
- Chapter 28: Traffic and Transport.

The details and competencies of the specialist who prepared this chapter can be found in volume 2A, chapter 1: Introduction.

Air pollution is a major environmental risk to our health. According to the World Health Organisation (WHO), air pollution can increase the risk of stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma. It is estimated that there are approximately 1,300 premature deaths annually in Ireland due to poor air quality from fine particulate matter (PM2.5) (Air Quality in Ireland, 2021). Air quality is addressed as per the Environmental Protection Agency (EPA) guidelines (EPA, 2022d), which specifies that air quality includes pollutants, suspended particles, odour and radiation. EPA monitoring in Ireland in 2021 showed that PM2.5 and NO_2 levels are within the current EU legal limits, however these pollutants exceed the WHO Air Quality Guidelines (AQGs) for health.

Note that climate impacts are addressed separately in chapter 17: Climate of this EIAR. Noise and vibration are also included under air quality in the EPA guidelines, but these are treated separately in chapter 25: Noise (Airborne) and Vibration. Non-ionising electro-magnetic field (EMF) effects are addressed in chapter 18: Population and Human Health.

23.2 Purpose of this chapter

The primary purpose of the EIAR is to provide an assessment of the likely direct and indirect significant effects of the Project on air quality. In particular, this EIAR chapter:

- Presents the existing air quality levels and trend from desk studies, relevant datasets and consultation to assess current environmental baseline conditions locally and nationally (section 23.7);
- Identifies any assumptions and limitations encountered in compiling the environmental information (section 23.7.5);
- Presents an assessment of the potential likely significant effects on air quality arising from the Project (section 23.10) based on the information gathered and the analysis and assessments undertaken. An assessment of potential cumulative impacts is provided in section 23.11 and an assessment of transboundary effects is outlined in section 23.12;
- Highlights any necessary monitoring (section 23.10.4) and/or measures (section 23.8.2) which could prevent, minimise, reduce or offset the possible environmental effects identified in the Environmental Impact Assessment (EIA) process.

23.3 Study area

Fugitive dust dispersion has the potential to cause local impacts through dust nuisance to the nearest sensitive receptors and also sensitive ecosystems. The potential for dust generation associated with the

various onshore and offshore components of the Project will be assessed on the basis of a review of the proposed construction activities and the proximity of these activities to sensitive receptors.

The boundary of the Project specifically consists of:

- The offshore wind farm area: This is where the offshore wind farm components will be located, which will include offshore foundations, the wind turbines, inter-array cables and offshore substation (OSS) as well as a short section of the offshore cable;
- The offshore cable corridor: This is where the offshore cable will be located;
- The onshore cable route: This is where the onshore cables and associated underground components (joint bays and link boxes) will be located; and
- The onshore substation site: This is where the onshore substation as well as the connections to the existing electricity Transmission System (National Grid) will be located.

The offshore wind farm area is located off the coast of County Louth to the east of Dundalk Bay, approximately 22 km east of Dundalk town centre and 18 km east of Blackrock. The closest wind turbine will be approximately 6 km from the closest shore on the Cooley Peninsula. The offshore wind farm area covers approximately 27.7 km^2 and is broadly hexagonal in shape with a length of approximately 5.3 km west to east and 6.6 km north to south (see Figure 23-1).

The onshore components (landfall, onshore cable route, and onshore substation site) of the Project will be situated in County Louth, between the towns of Drogheda (approximately 15.5 km to the south of the Project) and Dundalk (approximately 16.5 km to the north). The activities and operations associated with the construction phase may produce quantities of dust, particularly in dry weather conditions. The extent and nature of potential dust arisings is dependent on the nature of materials being used (soils, gravel, sands, peat, silts, etc.) and the nature of the construction operations. Additionally, the potential for dust dispersion and deposition is dependent on meteorological factors such as rainfall and wind direction and speed.

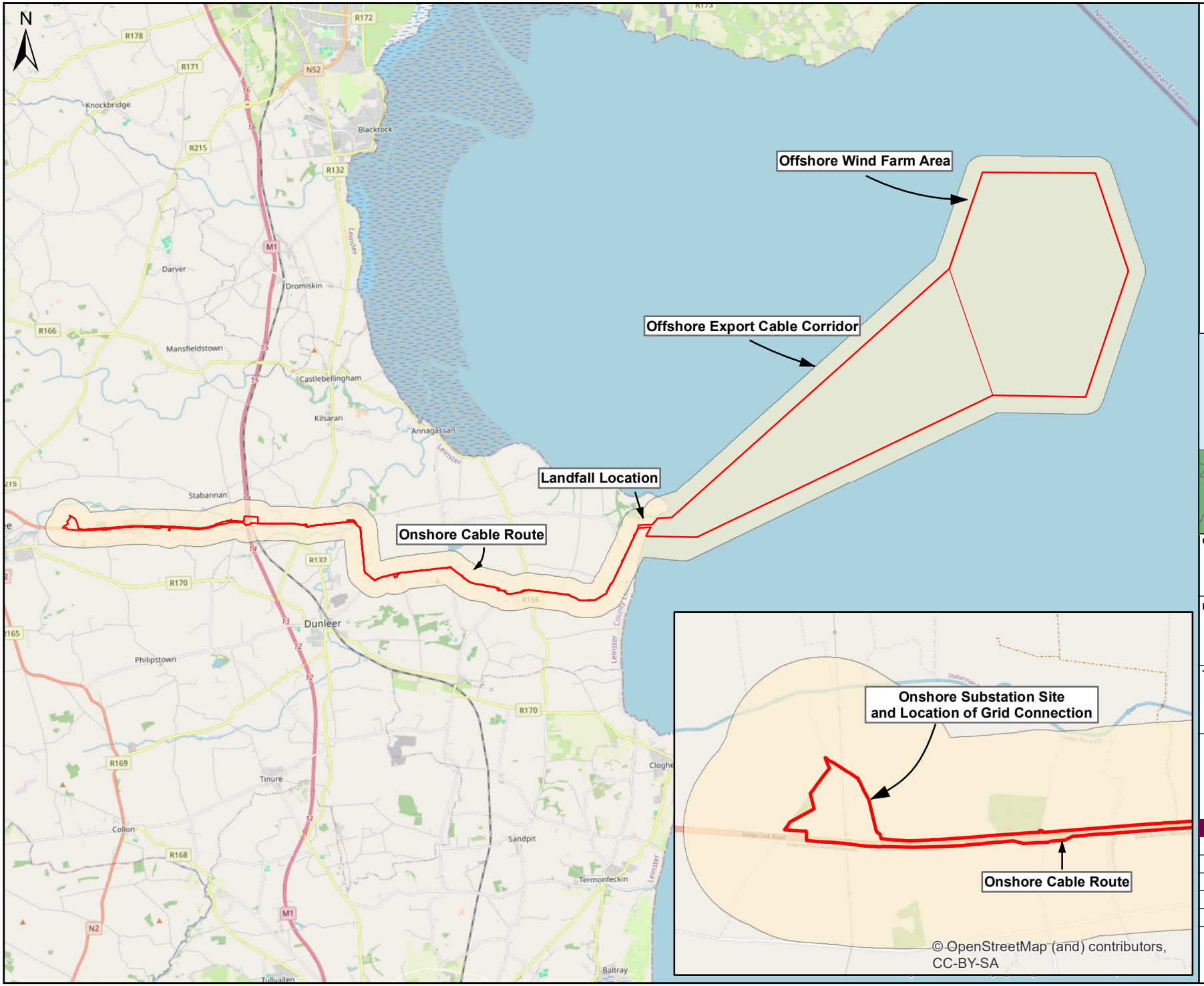
The Institute of Air Quality Management (IAQM) '*Guidance on the assessment of dust from demolition and construction*' states that a dust assessment is typically required where there is:

- A 'human receptor' within:
  - 350 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).
- An 'ecological receptor' within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

To ensure a robust assessment and given the ecological sensitivities in the area, the Zone of Influence (ZoI) for the construction phase dust impacts is set at 500 m.

In terms of road traffic during the operational phase, the Transport Infrastructure Ireland (TII) Air Quality Assessment of Proposed National Roads (Standard PE-ENV-01107) state that 200 m represents the distance within which detectable impacts of a road might be for worst case sensitive receptors.

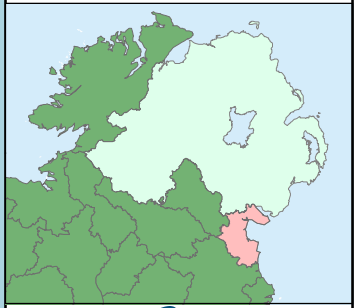
With consideration to the distances outlined in both the TII Guidelines and IAQM Guidance, an Air Quality Study Area of 500 m from all onshore and offshore components of the Project (dust and traffic) has been selected for the purposes of this assessment (refer to Figure 23-1). Other sites or receptors that lie just beyond the 500 m Air Quality Study Area, such as schools, settlements and industry, have been considered and included to provide a comprehensive assessment.



Legend

- Planning Application Boundary
- Air Quality Study Area (500m)

Data Sources: OWL; Tailte Éireann.



Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title

Figure 23-1
Air Quality Study Area

RPS
A TETRA TECH COMPANY

West Pier Business Campus,
Dun Laoghaire,
Co Dublin,
Ireland.

Tel: +353 (0) 1 4882900
Email: ireland@rpsgroup.com
Web Page: rpsgroup.com/ireland

Issue Details

Drawn By: NR	**Project No.** MDR1520b
Checked By: CC	**File Ref:** MDR1520bArc3021F02
Approved By: CC	
Scale: 1:150,000 @ A4	**Projection:** ITM (IRENET95) Geographic Co-ordinates: ETRS89
Date: 13/02/2024	

23.4 Policy context

Planning policy on renewable energy infrastructure is presented in volume 2A, chapter 2: Policy and Legislation. This section presents planning policy that specifically relates to air quality.

Air quality standards for Ireland and Europe are set out by the European Union (EU) (European Commission) and through national legislation. To protect human health, vegetation and ecosystems, the EU directives set out air quality standards for the member states, including Ireland, for a wide variety of pollutants. These include how we should monitor, assess and manage ambient air quality at a national level.

In 1996, the European Commission set out principles to the approach for air quality for member states with the Air Quality Framework Directive (96/62/EC); since this, there have been four "daughter" directives laying down limits for specific pollutants, including sulphur dioxide (SO_2), nitrogen dioxide (NO_2), oxides of nitrogen (NO_X), particulate matter, lead, carbon monoxide, benzene, ozone, and polyaromatic hydrocarbons, arsenic, nickel, cadmium and mercury in ambient air.

In 2005, the Commission proposed to consolidate the Air Quality Framework Directive and the first three "daughter" directives into the single Ambient Air Quality Directive (2008/50/EC). This included objectives in terms particulate matter PM2.5. The Ambient Air Quality Directive, along with the fourth "daughter" directive, provided the framework for the control of ambient air pollution in the EU.

In May 2008, the Commission published the Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC). This directive replaced the initial framework directive and the first, second and third "daughter" directives. The fourth "daughter" Directive (2004/107/EC) is due to be included in the CAFE directive at a later stage.

In Ireland, Air Pollution is governed by the Air Pollution Act 1987 (amended 2011), which sets out the legislation relating to compliance with legislation, monitoring of emissions, complaints relating to air pollution, air emission licencing (emissions from industry), enforcement (including burning of waste and distribution, sale, and burning of particular fuels such as bituminous coal) and air pollution research, education, and prevention.

The CAFE Directive was transposed into Irish legislation through the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), which replaces the *Air Quality Standards Regulations 2002* (S.I. No. 271 of 2002), the *Ozone in Ambient Air Regulations 2004* (S.I. No. 53 of 2004) and the *Environmental Protection Agency Act, 1992 (Ambient Air Quality Assessment and Management) Regulations 1999* (S.I. No. 33 of 1999). The fourth daughter directive was transposed into Irish legislation by the *Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009* (S.I. No. 58 of 2009).

In December 2013, the European Commission adopted a Clean Air Policy Package, based on an extensive review of existing EU air policy. The Clean Air Policy Package includes a Clean Air Programme for Europe. It also proposed Directives relating to the reduction of national emissions of certain atmospheric pollutants, and on limiting emissions of certain pollutants to air from medium combustion plants; The National Emissions Ceiling Directive (the National Emissions Ceilings Directive (NEC) Directive), and the Medium Combustion Plants Directive (the MCP Directive).

Ireland's National Clean Air Strategy was published in April 2023 by the Department of the Environment, Climate and Communications (DECC, 2023). The strategy outlines and promotes the coordinated measures needed for the implementation and delivery of the targets as set out in EU Clean Air Package (DECC, 2021). The EU Clean Air Package contains policies and legislative proposals aimed at updating and modernising EU Clean Air Legislation, including a new Clean Air Programme for Europe, a revised National Emissions Ceilings Directive (NEC Directive), and a new Directive aimed at reducing pollution from medium-sized combustion installations.

The National Clean Air Strategy provides a strategic policy framework, that will identify and promote integrated measures for the reduction of air pollution and the promotion of cleaner air whilst informing policy and contributing to wider national objectives.

Ireland has seen improvements in air quality over past decades through the implementation of policy measures at EU and National levels, such as the Smoky Coal Ban in urban areas in the 1990s and the Auto

Oil programme for emissions reductions in cars and Heavy Vehicles (HVs). However, the EPA note that poor air quality persists in Ireland mainly relating to the residential use of solid fuels for home heating, emissions from transport, especially from diesel and petrol engine passenger cars, and ammonia-related emissions from livestock farming.

In Ireland, the EPA is the national monitoring agency for air pollutants to ensure air quality standards are achieved.

23.5 Consultation

Table 23-1 summarises the issues raised relevant to air quality, which have been identified during consultation activities undertaken to date, together with how these issues have been considered in the production of this EIAR chapter. Chapter 6: Consultation (see volume 2A) provides details on the types of consultation activities undertaken for the Project between 2019 and 2024 and the consultees that were contacted.

Table 23-1: Summary of key issues raised during consultation relevant to air quality.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
September 2019	TII (EIA scoping response)	EIA should have regard to TII Guidelines.	TII Guidelines are considered in the air quality assessment (see section 23.10).

23.6 Methodology to inform the baseline

23.6.1 Desktop study

Information on air quality within the Air Quality Study Area was collected through a detailed review of existing studies and datasets. The key sources (i.e. data and reports) used to inform the baseline characterisation of the Air Quality Study Area are summarised in Table 23-2 below. These sources provide the most up to date data for this assessment.

Table 23-2: Summary of key data sources.

Sources	Study	Data type	Year
An Post	-	Geodirectory data	2022
Environmental Protection Agency (EPA)	Air Quality in Ireland 2017 – Indicators of Air Quality	Emission concentrations	2018
	Air Quality Report 2017 – supplemental information	Emission concentrations	2018
	Air Quality in Ireland 2018 – Indicators of Air Quality	Emission concentrations	2019
	Air Quality Report 2018 – supplemental information	Emission concentrations	2019
	Air Quality in Ireland 2019 – Indicators of Air Quality	Emission concentrations	2020
	Air Quality Report 2019 – supplemental information	Emission concentrations	2020
	Air Quality Report 2020 – supplemental information	Emission concentrations	2021
	Air Quality Report 2020 – Indicators of Air Quality	Emission concentrations	2021
	Air Quality in Ireland 2021 – Indicators of Air Quality	Emission concentrations	2022a
	Air Quality Report 2021 – supplemental information	Emission concentrations	2022b
Chapter 28: Traffic and Transport	Traffic data from EIAR chapter	Traffic volumes	2019

23.6.2 Assessment criteria

In May 2008, the European Commission introduced a revised Directive on Ambient Air Quality and Cleaner Air for Europe (2008/50/EC), known as the CAFE Directive which has been transposed into Irish Legislation through the revised Air Quality Standards Regulations (S.I. 180 of 2011). In Ireland, ambient air quality monitoring and assessment is carried out by the EPA in accordance with the requirements of the CAFE Directive.

The Directive and Regulations specify limit values in ambient air for sulphur dioxide (SO_2), lead, benzene, particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x). These limits are mainly for the protection of human health and are largely based on review of epidemiological studies on the health impacts of these pollutants. These limits are presented in Table 23-3.

Table 23-3: Limit values in ambient air quality (source: S.I. 180 of 2011).

Pollutant	Criteria	Value
Nitrogen dioxide	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 μg/m^3 NO_2
	Annual limit for protection of human health	40 μg/m^3 NO_2
	Annual limit for protection of vegetation	30 μg/m^3 NO + NO_2
Benzene	Annual limit for protection of human health	5 μg/m^3
Carbon monoxide	Maximum daily 8-hour running mean	10 mg/m^3
Lead	Annual limit for protection of human health	0.5 μg/m^3
Sulphur dioxide	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	350 μg/m^3
	Daily limit for protection of human health – not to be exceeded more than 3 times/year	125 μg/m^3
	Annual limit for protection of vegetation	20 μg/m^3
Particulate matter PM_{10}	24-hour limit for protection of human health – not to be exceeded more than 35 times/year	50 μg/m^3 PM_{10}
	Annual limit for protection of human health	40 μg/m^3 PM_{10}
Particulate matter $PM_{2.5}$	Annual target value for the protection of human health	25 μg/m^3 $PM_{2.5}$

In addition to the statutory limits for the protection of human health listed in Air Quality Standards Regulations (S.I. No. 180/2011) the WHO has published a set of AQGs to offer quantitative health-based recommendations for air quality management. The WHO Guidelines are based on reducing the risk to human health and in some cases the levels differ from the EU statutory limits as these limits are based on balancing health risks with technological feasibility, economic considerations and various other political and social factors in the EU.

The most recent publication from the WHO was in 2021 and the WHO-recommended AQGs and interim targets are presented in Table 23-4. These guidelines are not legally binding standards; however, they do provide WHO Member States with an evidence-informed tool that they can use to inform legislation and policy. The levels are presented as an ultimate guideline as well as a series of interim targets which are proposed as incremental steps in a progressive reduction of air pollution and are intended for use in areas where pollution is high. It is notable that the AQG recommended by the WHO are significantly lower than the Air Quality Standards Regulations (S.I. No. 180/2011, as amended) for key traffic pollutants such as NO_2 and PM_{10}.

Note that in October 2022 the Commission proposed to revise the Ambient Air Quality Directives (Table 23-3) to align more closely with the recommendations of the WHO (Table 23-4). As such, this assessment employs the WHO guidelines as the appropriate assessment criteria for the protection of human health.

Table 23-4: WHO Recommended Air Quality Guideline (AQG) levels and interim targets (2021).

Pollutant	Averaging time	Interim target				AQG
		1	2	3	4	
$PM_{2.5}$ ($\mu g/m^3$)	Annual	35	25	15	10	**5**
	24-hour	75	50	37.5	25	**15**
PM_{10} ($\mu g/m^3$)	Annual	70	50	30	20	**15**
	24-hour	150	100	75	50	**45**
O_3 ($\mu g/m^3$)	Annual	100	70	–	–	**60**
	24-hour	160	120	–	–	**100**
NO_2 ($\mu g/m^3$)	Annual	40	30	20	–	**10**
	24-hour	120	50	–	–	**25**
SO_2 ($\mu g/m^3$)	24-hour	125	50	–	–	**40**
CO (mg/m^3)	24-hour	7	–	–	–	**4**

23.7 Baseline environment

23.7.1 Current baseline environment

The location for the offshore elements of the Project is in the Irish Sea, off the coast of County Louth (approximately 22 km east of Dundalk town centre and 18 km east of Blackrock). The total offshore wind farm area is 27.7 km^2 and is located approximately 6 km from the closest shore on the Cooley Peninsula. The offshore elements consist of a series of Wind Turbine Generators (WTGs) and one associated OSS. These elements will be connected with inter-array cables installed within the offshore wind farm area, and to the landfall via an offshore cable.

The onshore components (landfall, onshore cable route, and onshore substation site) of the Project will be situated in County Louth, between the towns of Drogheda (approximately 15.5 km to the south of the Project) and Dundalk (approximately 16.5 km to the north). Other towns in the vicinity of the Project include Ardee (approximately 2 km west of the onshore substation site), Dunleer (approximately 2.9 km south of the onshore cable route), Castlebellingham (approximately 4.3 km north of the onshore cable route). There are several small, clustered settlements dispersed throughout the area. The onshore cable route is approximately 20.1 km in length located along the existing road network from the landfall, south of Dunany Point, to the onshore substation site at Stickillin, approximately 3 km east of Ardee town on the N33.

The road network along the onshore cable route is predominantly composed of national and local roads, including the R166, R132, L-2226, L-6238, L-2239, L-2240, L-2221, L-6223 and the N33. The M1 motorway, R166 and N33 all traverse the onshore cable route. The Dublin to Belfast train line passes through the Air Quality Study Area, traversing the onshore cable route at Charleville Bridge at exit 14 (Ardee/N2) off the M1 for Drumcar L-2226.

The surrounding landscape in the local area of the Project is typically agricultural and undeveloped with the surrounding fields employed for a mixture of tillage, pasture and arable uses. The field pattern in the surrounding area is irregular, variable in scale and is delineated by hedgerows and trees.

There are various receptors, including residential, agricultural, and commercial properties located in the onshore area and these receptors vary in distance from the onshore components of the Project. These receptors could experience a change in air quality and the extent of these changes in air quality is identified in this assessment.

The population density in the vicinity of the onshore components is low, consisting mainly of one-off detached residential properties or small groupings of properties located along local roads including the roads located along the onshore cable route.

The nearest receptors to the onshore components of the Project are the residential dwellings, agricultural, and commercial operations located along the onshore cable route and surrounding the landfall location and the onshore substation site.

An Post GeoDirectory (2022) indicates there is 744 properties located within the Air Quality Study Area between the landfall at Dunany Point to the onshore substation site at Stickillin on the N33. Of the 744 properties, 607 were identified as 'residential' properties, 31 were identified as 'commercial', 85 were classified as 'both' (both residential and commercial)[1] and 21 properties were identified as 'unclassified'. Residential properties are the main property type identified within the Air Quality Study Area, representing the highest number of properties present within each of the buffers outlined in Table 23-5.

Table 23-5: Property receptors in the Air Quality Study Area (GeoDirectory, 2022).

Buffer band*	0-50 m	50-100 m	100-200 m	200-300 m	300-400 m	400-500 m	Total
Residential	123	170	61	65	66	122	**607**
Commercial	6	14	3	1	6	1	**31**
Both	19	25	12	11	7	11	**85**
Unknown	4	4	2	1	4	6	**21**
Total	**152**	**213**	**78**	**78**	**83**	**140**	**744**

A small number of commercial operations are within the vicinity of the onshore infrastructure. The nearest commercial receptors include various operations along the onshore cable route. Notable commercial operations or businesses close to or within the Air Quality Study Area are listed in Table 23-6. Commercial properties are listed separately as they generally have a lower sensitivity and also to understand if they could be source of emissions.

Table 23-6: Commercial receptors in the Air Quality Study Area.

Commercial receptor	Location
BAKS Bulk Services: This appears to be a storage, product management and distribution facility (warehousing). A coal and solid fuel merchants, King Coal, is also located at this site (appears to be a cash and carry coal depot and grain merchants). BAKS Bulk Services is also listed as a lower tier Control of Major Accident Hazards (COMAH) establishment on the HSA website.	Located off Drumcar Road, approximately 600 m from the onshore cable route (nearest point).
Carron's of Togher: Convenience store.	Located in Togher, on the onshore cable route, at the crossroads with the R166.
Deeside Agri Services Ltd.: Operates as an agricultural product wholesaler.	Located approximately 180 m south the onshore cable route along the N33, west of exit 14 off the M1 Motorway.
DPD Ireland: Operates as a courier company, this is its Louth and Meath Depot (no. 43).	Located off Drumcar Road, at the same site as BAKS Bulk Services, approximately 500 m from the onshore cable route.
Darby's Pub: Public House.	Located in Togher, on the onshore cable route, at the crossroads with the R166.
Dorian's Bar: Public House.	Located at Mullins Cross, on the onshore cable route.
Fanfruit Ltd.: A fruit and vegetable supplier.	Located approximately 50 m north of the onshore cable route along the L-2226 road.

[1] An Post GeoDirectory identifies properties as 'Both', indicating that the property is both residential and commercial in nature; in rural areas, properties with the status of 'both' generally tend to refer to farms, agricultural businesses or similar.

Commercial receptor	Location
Kieran and McGee, Ardee Livestock Sales: This operates as a livestock auction house.	Located approximately 150 m south of the onshore cable route along the N33, west of exit 14 off the M1 Motorway.
Whiteriver Group: A wood and laminate flooring supplier.	Located off Drumcar Road, approximately 760 m west of the onshore cable route at nearest point.
Dunany Flour: Organic Flour producer/supplier.	Located approximately 580 m northwest of the onshore cable route on Dunany Road.
Kens Kabs: Taxi and Cab service.	Located on Castlethomas Road (South).
Amanda's Driving School: Driving Lesson Service.	Located on the onshore cable route on the L-2226, approximately 300 m west of Mullins Cross.

No primary or secondary schools were identified within the 500 m Air Quality Study Area. However, a special education school and residential centre were identified within 500 m of the Air Quality Study Area, in Drumcar. The schools and services identified in the vicinity of the onshore cable route include:

- St. John of God North East Services, Drumcar – approximately 411.5 m north of onshore cable route nearest point at the River Dee bridge;
- St. Mary's Special School, Drumcar – approximately 572.9 m north of onshore cable route's nearest point at the River Dee bridge. The main school building is located on the same campus of the St. John of God North East Services;
- St Colmcille's National School, Tulleydonnell, Togher – approximately 662.2 m south of the onshore cable route; and
- Scoil San Nioclás, Stabannon – approximately 826.0 m north of the onshore cable route and the N33.

Population and settlements, including properties and schools, within the vicinity of the Project, are considered and assessed in chapter 18: Population and Human Health.

The nearest Natura 2000 sites to the onshore infrastructure are listed as follows:

- North-west Irish Sea candidate Special Protected Area (cSPA) (Site Code: 004236) – directly adjacent to the TJB and onshore cable route at Dunany and approximately 16.5 km from the onshore substation;
- Stabannan-Braganstown Special Protected Area (SPA) (Site Code 004091) – approximately 3.1 km north of the onshore substation site, approximately 1.8 km from the onshore cable route, and approximately 13.0 km from the proposed landfall;
- Clogher Head Special Area of Conservation (SAC) (Site Code: 001459) – approximately 19.4 km from the onshore substation site, approximately 5.3 km from the onshore cable route, and approximately 6.5 km from the proposed landfall;
- Dundalk Bay SAC (Site Code: 000455) – approximately 10.1 km from the onshore substation site, approximately 3.3 km from the onshore cable route, and approximately 4.4 km from the proposed landfall; and
- Dundalk Bay SPA (Site Code 004026) – approximately 10.1 km from the onshore substation site, approximately 0.69 km from the onshore cable route and approximately 0.8 km from the proposed landfall.

All of these European sites (excluding the North-west Irish Sea cSPA) are located outside the Air Quality Study Area and, as such, the potential for direct or indirect adverse impact from dust from the construction, operational and maintenance, or decommissioning phases of the Project are negligible. Dunany point proposed Natural Heritage Area (pNHA) is also located within the vicinity of the Project and is traversed by offshore cable corridor and TJB.

The assessment of impacts on habitats and species, including the North-west Irish Sea cSPA and Dunany point pNHA located within the vicinity of the Project, is provided in chapter 19: Onshore Biodiversity.

23.7.2 Existing sources in the area

The main existing sources of pollution in the Air Quality Study Area are from road and rail traffic, shipping, agriculture and general dusts.

The road network along the onshore cable route is predominantly composed of national and local roads, including the R166, R132, L-2226, L-6238, L-2239, L-2240, L-2221, L-6223 and the N33. One motorway, the M1, traverses the Air Quality Study Area and the onshore cable route at exit 14 (Ardee/N2). The Dublin to Belfast train line traverses the onshore cable route at Charleville Bridge, also located at exit 14 (Ardee/N2) off the M1 for Drumcar L-2226.

The local and regional roads serve vehicles entering and leaving the M1 for operations in the area including other developments/construction, agriculture/farming, businesses (industrial and commercial) and residential in the vicinity.

The Navigation Risk Assessment (NRA) (see volume 2B, appendix 13-1) has identified a range of vessels that are operational within the Air Quality Study Area including cargo vessels, tankers, fishing vessels, recreational craft, service vessels, etc. These vessels are predominantly accessing the main ports of Drogheda, Dundalk, Greenore, Warrenpoint and Kilkeel as well as the smaller harbours of Port Oriel and Carlingford. The NRA identified that the level of shipping traffic through the Air Quality Study Area is low. All of these ships will generate combustion gases through the diesel engines that will give rise to localised emissions in these areas.

Local agricultural activities have the potential give rise to combustion emissions from mobile plant (both on road and off road), dusts from ploughing and harvesting, etc., as well as odours from manure management. Typically, these sources are minor at a local level and are predominately seasonal with increased activity in the spring to autumn months.

Waste operations in an area can give rise to odour and dust nuisances to its receptors. There are approximately four waste operations currently licensed in County Louth but all located beyond the Air Quality Study Area.

Whilst the Air Quality Study Area examines receptors within 500 m (for example), a 10 km buffer is also examined to understand existing sources of air pollution. There are approximately fifteen industrial licensed facilities located in County Louth. Of these, there are two industrial facilities noted within the surrounding area of the Project that are currently licenced by the EPA, however, these are both located beyond the Air Quality Study Area:

- P0836-01 – Suretank Limited, Shamrock Hill, Dunleer, Co. Louth, located approximately 3 km south of the L-2226; and
- P0935-01 – Duleek Poultry Enterprises Limited, Boharnamoe, Ardee, Co. Louth, located approximately 4 km west of the onshore substation site.

As mentioned in Table 23-6, a Lower Tier COMAH[2] establishment is present within the Air Quality Study Area; BAKS Bulk Services[3]. This establishment is listed on the most recent list of Lower Tier Establishments available on the HSA website[4], last updated 12 February 2024. This appears to be a storage, product management and distribution facility (warehousing). As per the Regulation 25 information provided for BAK

[2] https://www.hsa.ie/eng/Chemicals/COMAH

[3]https://www.hsa.ie/eng/Your_Industry/Chemicals/Legislation_Enforcement/COMAH/Information_to_the_Public/Lower_Tier_Establishments_by_Region/Lower_Tier_Establishments_in_Dublin_Louth/

[4]https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/comah/list_of_establishments/lower_tier_sites_12_02_2024.pdf

Bulk Services Ltd on the HSA Website[5], it describes the activity at the site as 'Whiskey maturation warehousing'. At the time of writing, the last update of this information is noted as November 2019. As noted above, King Coal, a coal and solid fuel merchants, is also present at this site, however this business is not named/listed as a COMAH Establishment. This facility lies outside of the Air Quality Study Area.

Industrial facilities and COMAH establishments (Seveso sites) are addressed further in chapter 24: Risk of Major Accidents and Natural Disasters.

Each of the operations/sources outlined above have potential emissions of both scheduled emissions and/or fugitive emissions of dusts as well as road traffic serving each operation.

General dusts in the area will arise from various sources including dust resuspension on the road network, agriculture and solid fuel burning for space heating such as domestic fires. The coastal nature of the Air Quality Study Area would also result in some dust generation from sea salt aerosol which is a common natural source of dust in these areas.

23.7.3 Baseline air quality

Under the CAFE Directive, EU member states must designate zones for the purpose of managing their air quality. Ireland's air quality legislation outlines the national air quality zones based on population. Four zones are defined in the Air Quality Standards Regulations (2011). On 1 January 2013, the zones were updated on foot of the most recent population counts at the time, derived from the 2011 CSO Census, as well as to ensure alignment with the coal restricted areas in the 2012 Regulations (S.I. No. 326 of 2012). The main areas defined in each zone are:

- Zone A – Dublin Conurbation;
- Zone B – Cork Conurbation;
- Zone C – Other cities and larges towns comprising of Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee, Dundalk, Navan, Letterkenny, Celbridge, Newbridge, Mullingar, Balbriggan, Greystones, Leixlip and Portlaoise; and
- Zone D – Rural Ireland, (i.e. the remainder of the State excluding Zones A, B and C).

The onshore infrastructure of the Project are located between the landfall, south of Dunany Point, and the onshore substation site at Stickillin (approximately 3 km east of Ardee on the N33), in the jurisdiction of Louth County Council. As such, the onshore infrastructure lies within EPA Air Quality Zone D (Rural Ireland: the remainder of the State excluding Zones A, B and C) and is located in the Rural East Air Quality Index Region.

The offshore elements of the Project do not lie within any specified EPA zone. However, it may be assumed that air quality within the offshore wind farm area is slightly lower than that presented for Zone D for the onshore elements given the absence of any major sources of air pollution in the offshore wind farm area.

The EPA air quality monitoring network for Zone D and the nearest EPA National Ambient Air Quality Monitoring locations have been reviewed and suitable representative data is presented to identify the background air quality in the area of the Project. A summary of the EPA monitoring carried out in Zone D (Rural Ireland) is presented in the following sections.

The EPA air quality monitoring stations identified closest to the Project are located at Dundalk and Drogheda. However, these are identified as within Zone C (other cities and large towns), and so the data recorded is not representative of the site which is in Zone D. Therefore, overall air quality in the receiving environment is described using the average annual mean value concentrations from all measured monitoring

[5]https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/comah/information_to_the_public/lower_tier_establishments_by_region/lower_tier_establishments_in_dublin_louth/bak_lower_tier_r25.pdf

stations in Zone D[6]. The EPA monitoring network for Zone D includes multiple monitoring locations in rural areas across Ireland. Of these, the Zone D monitoring station located at Kilkitt, Co. Monaghan, in the northeast of the country, would be the closest and as such most representative of the Project location. This monitoring station is situated approximately 35 km northwest of the onshore substation site at Stickillin (the nearest point of the Project).

Table 23-7 shows the aggregated annual mean value concentrations measured for SO_2, PM_{10}, $PM_{2.5}$, NO_2, NO_x, CO and Ozone in Zone D for 2017 to 2021. The table compares the annual mean measured levels with the limit values defined in the National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011). The averages are considered representative of Rural Ireland and the locations of the onshore components of the Project.

Table 23-7: Extract of summary data from EPA ambient air monitoring for Zone D in 2017 to 2021.

Pollutant	Unit	Annual mean concentration					Annual limit for protection of human health	WHO Annual Air Quality Guidelines 2021
		2017	2018	2019	2020	2021		
Nitrogen dioxide (NO_2)	µg/m^3	4.4	4.7	5.7	7.6	7.5	40	10
Nitrogen oxide (NO_X)	µg/m^3	5.7	6.7	7.8	15.9	14.2	30	-
Particulate matter (PM_{10})	µg/m^3	9.9	11.8	14.3	11.2	11.9	40	15
Particulate matter ($PM_{2.5}$)	µg/m^3	7.4	9.4	9.3	7.8	8.7	25	5
Carbon monoxide (CO)*	mg/m^3	N/A**	N/A**	N/A**	0.4	0.3	10	-

*One site – Kilkitt, Co. Monaghan.
**No CO concentrations available for Zone D in EPA Air Quality in Ireland 2017, 2018 and 2019 Reports.

The existing baseline levels of NO_2, NO_x, SO_2, PM_{10}, $PM_{2.5}$, and Ozone based on data from the EPA monitoring network are currently below annual ambient Air Quality Limit Values in Zone D. The annual mean data for Carbon Monoxide (CO) in Zone D was not available for 2017 to 2021.

As Kilkitt is the nearest Zone D EPA National Ambient Air Quality Monitoring site to the Project, a summary of the air quality monitoring results for this location are presented in the following sections. The parameters listed by the EPA Maps tool as monitored at this location are PM_{10}, SO_2, NO_2 and ozone.

Table 23-8 outlines the annual mean concentrations measured for PM_{10}, SO_2, NO_2 and ozone at Kilkitt for 2017 to 2021. The EPA Air Quality in Ireland Reports supplemental information includes measurements of NO_x recorded at Kilkitt which have also been included in the table. The results from this location are considered representative of the air quality of the Rural East area and the site of the Project. The table compares the annual mean measured levels for the location with the limit values defined in the National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011).

[6] No site-specific baseline undertaken; the baseline data presented here is taken as representative of the Air Quality Study Area as per standard practice.

Table 23-8: Annual mean data from EPA ambient air monitoring site at Kilkitt in 2017 to 2021.

Pollutant	Unit	Annual mean concentration					Annual limit for protection of human health
		2017	2018	2019	2020	2021	
Nitrogen dioxide (NO_2)	µg/m^3	2.3	3	5	2	2.4	40
Nitrogen oxide (NOx)	µg/m^3	2.6	4	7.6	2.5	3.1	30
Sulphur dioxide (SO_2)	µg/m^3	1.6	2.6	0.7	1.4	1.7	20
Particulate matter (PM_{10})	µg/m^3	7.8	9	7	8	7.8	40

In summary, existing baseline levels of pollutants based on the data from both the EPA Zone D summary data and Kilkitt monitoring station are currently below ambient AQLV and by extension the levels in the vicinity of the onshore and offshore components of the Project are also considered to be below the limit values and the WHO guidelines.

23.7.4 Future baseline scenario

The EU (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (hereafter the "EIA Regulations 2018") require that '*a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge*' is included within the EIAR.

In the event that the Project is not constructed, an assessment of the future baseline conditions has been carried out and is described below:

Should the Project not progress, air quality within the Air Quality Study Area will continue in line with baseline trends. Some improvement in conditions may be experienced due to legislative driven measures and mitigation.

23.7.5 Data validity and limitations

The air quality data provided is the most recent available data and considered representative of the Air Quality Study Area. Data on baseline air quality has been derived from the EPA database (EPA, 2018- 2021) and while these stations are not located within the Air Quality Study Area, the data presented is considered representative of air quality in the Study Area.

23.8 Key parameters for assessment

23.8.1 Project design parameters

The project description is provided in volume 2A, chapter 5: Project Description. Table 23-9 outlines the project design parameters identified that have been used to inform the assessment of potential impacts of the construction, operational and maintenance and decommissioning phases of the Project on sensitive air quality receptors.

Table 23-9: Project design parameters used for the assessment of potential impacts on air quality.

Potential impact	Phase[1]			Project design parameters	Justification
	C	O	D		
Fugitive dust generation from construction activities associated with the onshore infrastructure	✓	✗	✓	**Construction & decommissioning phases:** Construction activities (from mobilisation, site investigations through to excavations and reinstatement) that have potential to	Activities within the planning application boundary that have the potential to result in dust.

Potential impact	Phase[1] C	O	D	Project design parameters	Justification
				result in dust construction activities including the following activitires: • Transition joint bay (TJB) and works at the landfall; • 20.1 km onshore cable route; • 29 joint bays and associated construction activities; • Fibre optic cable connections; • Onshore substation site and grid connection (including pylon demolition); and • Temporary construction compounds and haul roads and accesses. Construction programme of 27 months for onshore infrastructure.	
Increased vehicle emissions from traffic associated with the Project	✓	✗	✓	**Construction & decommissioning phases:** Construction traffic (see chapter 28: Traffic and Transport). Combined construction programme of 33 months for onshore and offshore infrastructure.	Traffic volumes that will generate increase in vehicles emissions.

1. C= Construction, O = Operation, D = Decommissioning.

23.8.2 Measures included in the Project

As part of the project design process, several measures have been proposed to reduce the potential for impacts on air quality (see Table 23-10). These measures include designed-in and management measures (controls). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Project and have therefore been considered in the assessment presented in section 23.10 (i.e. the determination of magnitude assumes implementation of these measures). These measures are considered standard industry practice for this type of development.

Table 23-10: Measures included in the Project.

Measures included in the Project	Justification
Measures included in the Project regarding traffic are outlined in chapter 28: Traffic and Transport of this EIAR and will mitigate the effects these impacts may have in terms of air quality.	There will be an increase in traffic along local roads during the construction phases of the Project, which has the potential to cause nuisance to agricultural traffic (see chapter 28: Traffic and Transport for further details on the traffic environment).
Implementation of Construction Traffic Management Plan (CTMP) (see appendix 5-9 in volume 2A).	A CTMP will be implemented for the construction phase of the Project. The CTMP address temporary disruption to access, traffic signals, road closures or diversions, and management of pedestrian areas, crossings and footpaths. This will indirectly result in reduced vehicle emissions through a more efficient traffic flow potentially reducing congestions and idling. This will help maintain the baseline air quality in the area.
Implementation of Construction Environmental Management Plan (CEMP), see volume 2A, appendix 5-1: CEMP.	The CEMP outlines the minimum standards required as part of this EIAR during the development of the Project. The CEMP will be implemented and will include the following mitigation related to dust control: • Temporary site roads will be regularly cleaned and maintained as appropriate. Hard surface roads (public and site) will be swept to remove mud and aggregate materials

Measures included in the Project	Justification
	from their surface while any un-surfaced roads shall be restricted to essential site traffic only; • Any temporary site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions (also applies to vehicles delivering material with dust potential); • All vehicles exiting the works will make use of a wheel wash facility (or similar) prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Wheel washes will be self-contained systems that do not require discharge of the wastewater to water bodies; • Public roads outside the works will be regularly inspected for cleanliness, and cleaned as necessary; • Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind; • Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; • All vehicles which present a risk of spillage of materials, while either delivering or removing materials, will be loaded in such a way as to prevent spillage on to the public road; • The Contractor will be required to ensure that all vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum; and • The Contractor will be required to monitor monthly dust deposition levels each month for the duration of construction for comparison with the guideline of 350 mg/m^2/day (for non-hazardous dusts). This monitoring should be carried out at suitable locations such as sensitive receptors around the Project works. Where dust levels are measured to be above this guideline the mitigation measures in the area will be reviewed as part of the CEMP.

23.8.3 Impacts scoped out of the assessment

Based on the baseline environment and the project description outlined in volume 2A, chapter 5: Project Description, several impacts are proposed to be scoped out of the assessment for air quality. These impacts are outlined, together with a justification for scoping for a scoping out decision, in Table 23-11.

Table 23-11: Impacts scoped out of the assessment for air quality.

Potential impact	Justification
Construction dust from the offshore construction.	The nature of the works coupled with the distance to the nearest sensitive properties means that dust impacts from this element of construction will be negligible.
Dust from operations and maintenance	Due to the limited nature of activities required for the operational and maintenance of the onshore infrastructure, there is minimal risk that fugitive dust will arise. There is no potential for dust from the operational and maintenance of the offshore infrastructure.
Odour during construction	Very low odour risk given the nature of the construction activities associated with the onshore infrastructure (onshore cable route, landfall, or onshore substation site) and any impact would be transient.
Impacts from contaminated dust from excavation of contaminated soils	There is minimal potential to uncover contaminated areas or waste due to the location of the onshore infrastructure in an existing road and agricultural land. Chapter 30: Resource and Waste Management states there is minimal potential to uncover waste. Therefore, there is minimal potential for

Potential impact	Justification
	contaminated dusts to arise during excavations for the onshore cable route, landfall, or substation.
Vehicle emissions from operational and maintenance traffic	Minimal operational traffic requirements are proposed with no potential for significant air quality impact. Minor maintenance traffic is envisaged due to infrequent movement of onshore personnel and vehicles to and from the onshore cable route, and the operations and maintenance base with no substantial potential for air quality impact. Additionally, the onshore cable will be monitored remotely.
Offshore construction traffic	The number of these vessels is limited and as this activity is offshore, it won't be in the proximity of any residential property. Therefore, the potential for air quality impact from marine traffic emissions during construction is not considered significant.
Offshore operational and maintenance marine traffic	The operations and maintenance base will be located at a port in County Louth or Co. Down. There is a predicted 352 marine vessel movements per year, but with limited direct missions from these vessels, there is no potential significant impact to air quality. In addition, these emissions are offshore and hence will have negligible potential for any direct adverse impact on sensitive human receptors. The DEFRA (2022) conversion factors demonstrate how ship freight has a much lower a carbon generation than road and air transport based on tonnage of material transferrable. Ship freight is more efficient than road freight due to the higher capacity for load over long distances reducing trips. Furthermore, the marine vessel movements are offshore which will have negligible potential for any direct adverse impact on sensitive human receptors.
Diesel generators at the onshore substation site and if required for restart at WTGs	Emergency diesel generators (less than 500 KVA each) will provide backup power for the ancillary electrical services in Compound 1 and Compound 2. Given that these generators will only be used in rare cases, such as the loss of main power, and the nearest sensitive residential properties are over 400 m from the generator locations, the potential for air quality impact is not considered significant. Similarly, if required for restart purposes at the WTGs, they are located away from sensitive receptors to cause impact.
Indirect effects (i.e. reduction in the generation of fossil fuel emissions)	The development of renewable electricity generating infrastructure has the potential to meet the State's energy demand and thereby offset the requirements for fossil fuel combustion to contribute to the energy mix. Indirect effects will arise as a result of the renewable electricity generating plant potentially reducing the generation of fossil fuel emissions at gas, peat and coal powered plants across the State. Poor air quality has a negative impact on people's health and there are an estimated 1,300 premature deaths in Ireland per year due to particulate matter in our air. Air monitoring results in 2021 from EPA stations across Ireland show that fine particulate matter ($PM_{2.5}$), mainly from burning solid fuel in our homes, and nitrogen dioxide (NO_2) mainly from road traffic, remain the main threats to good air quality. Many sources simultaneously emit CO_2 and air pollutants, therefore policies aimed at addressing climate change have benefits or side-effects for air quality, and vice versa. Short-term 'win-win' policies that improve air quality and limit climate change include the use of clean renewable energy. Changing how homes are heated by moving away from smoky fuels and instead use cleaner choices like electricity improve air quality. These potential indirect impacts are associated with the operational phase only and no significant indirect effects for the construction or decommissioning phases are identified.

23.9 Impact assessment methodology

23.9.1 Overview

The assessment on air quality has followed the methodology set out in volume 2A, chapter 3: Environmental Impact Assessment Methodology. Specific to the air quality impact assessment, the following guidance documents have also been considered:

- Advice Notes for Preparing Environmental Impact Statements, Environmental Protection Agency (EPA, 2015);
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (EPA, 2022d);
- Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects (DECC, 2017).
- TII Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document PE-ENV-01106 (TII, 2022);
- TII Road Emissions Model (REM): Model Development Report GE-ENV-01107 (TII, 2022);
- WHO Global Air Quality Guidelines: Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide (WHO, 2021); and
- Guidance on the assessment of dust from demolition and construction (IAQM, 2014).

In addition, the air quality impact assessment has considered the legislative framework as defined by:

- The EIA Directive (2014/52/EU);
- The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018);
- The Directive on Ambient Air Quality and Cleaner Air for Europe (2008/50/EC)(CAFE Directive); and
- The Air Quality Standards Regulations (S.I. 180 of 2011).

23.9.2 Impact assessment criteria

The criteria for determining the significance of effects is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in volume 2A, chapter 3: Environmental Impact Assessment Methodology.

The criteria for defining impact magnitude in this chapter are outlined in Table 23-12 below.

Table 23-12: Definition of terms relating to the magnitude of an impact.

Magnitude of impact	Definition
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse)
	Large scale or major improvement or resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial)
Medium	Loss of resource, but not adversely affecting integrity of resource; partial loss of/damage to key characteristics, features or elements (Adverse)

Magnitude of impact	Definition
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial)
Low	Some measurable change in attributes, quality or vulnerability, minor loss or, or alteration to, one (maybe more) key characteristics, features or elements (Adverse)
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial)
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse)
	Very minor benefit to, or positive addition of one or more characteristics, features or elements (Beneficial)

The criteria for defining receptor sensitivity in this chapter are outlined in Table 23-13 below.

Table 23-13: Definition of terms relating to the sensitivity of the receptor.

Sensitivity	Definition
High	High importance and rarity, national scale and limited potential for substitution
Medium	High or medium importance and rarity, regional scale, limited potential for substitution
Low	Low or medium importance and rarity, local scale
Negligible	Very low importance and rarity, local scale

The significance of the effect upon air quality is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in Table 23-14. Where a range of significance of effect is presented in Table 23-14, the final assessment for each effect is based on calculated assessment and professional judgement.

For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in terms of the EIA Regulations.

Table 23-14: Matrix used for the assessment of the significance of the effect.

Sensitivity of receptor	Magnitude of impact			
	Negligible	**Low**	**Medium**	**High**
Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight
Low	Imperceptible or slight	Imperceptible or slight	Slight	Slight or moderate
Medium	Imperceptible or slight	Slight	Moderate	Moderate or major
High	Slight	Slight or moderate	Moderate or major	Major or profound

Note: Significance has been adapted from the EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Figure 3.4 Chart showing typical classification).

The EPA (2022d) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports document provides some useful guidance on the significance of effect levels. The significance of effect levels are adapted from these guidelines and described as follows:

- **Profound:** An effect which obliterates sensitive characteristics;
- **Major:** An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment;

- **Moderate:** An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends;
- **Slight:** An effect which causes noticeable changes in the character of the environment without affecting its sensitivities; and
- **Imperceptible:** An effect capable of measurement but without significant consequences.

23.9.3 Air quality assessment criteria

Fugitive dust

Sensitivity to dust depends on the duration of the dust deposition, the dust generating activity, and the nature of the deposit. Therefore, a higher tolerance of dust deposition is likely to be shown if only short periods of dust deposition are expected and the dust generating activity is either expected to stop or move on. Due to the scale of the proposed Project construction sites are likely to be in operation for extended periods and therefore detailed consideration of potential dust impacts and how to mitigate impacts is required.

The criteria for appraisal of the magnitude of dust emissions is reviewed for each site compound area in the tables below under the headings of demolition, earthworks, construction and track-out based on a series of criteria set out by the IAQM. The risk of potential for dust impacts with respect to dust nuisance, human health and ecology are a function of magnitude of the dust generation at each construction site in combination with the sensitivity of the surrounding area.

Demolition

Dust emission magnitude from demolition can be classified as small, medium or large and are described as follows:

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

Table 23-15: Risk of dust impacts – demolition.

Sensitivity of area	Dust emission magnitude		
	Large	**Medium**	**Small**
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling the site and landscaping. Dust emission magnitude from earthworks can be classified as small, medium or large and are described as follows:

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

- **Small:** Total site area < 2,500 m^2, soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4 m in height, total material moved < 20,000 tonnes, earthworks during wetter months.

Table 23-16: Risk of dust impacts – earthworks.

Sensitivity of area	Dust emission magnitude		
	Large	**Medium**	**Small**
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

Construction

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

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

Table 23-17: Risk of dust impacts – construction.

Sensitivity of area	Dust emission magnitude		
	Large	**Medium**	**Small**
High	High risk	Medium risk	Low risk
Medium	Medium risk	Low risk	Negligible
Low	Low risk	Low risk	Negligible

Track-out

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, vehicle numbers, geology and duration. Track-out refers to the dirt, mud, or other debris tracked or carried onto the public road network on the wheels of vehicles exiting construction sites. Dust emission magnitude from Track-out can be classified as small, medium or large and are described as follows:

- **Large:** > 50 HV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m**;**
- **Medium:** 10 – 50 HV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100 m; and
- **Small:** < 10 HV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

Table 23-18: Risk of dust impacts – track-out.

Sensitivity of area	Dust emission magnitude		
	Large	**Medium**	**Small**
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

Combustion gases/particulates (traffic and plant emissions)

The TII Guidance (PE-ENV-01106) states that the magnitude of change should be used to describe the quality of the effect as positive, negative or neutral using the criteria in Table 23-19. In addition, the impact descriptors in Table 23-20 should be used to describe the impact at each receptor location, which takes into consideration the percentage change in concentration relative to the air quality standards of the pollutant. As noted, this assessment uses the WHO guidelines (Table 23-4) rather than the statutory limits as the relevant AQLV.

Table 23-19: TII quality of effect criteria (2022).

Quality of effect	Description
Positive effect	Where there is a decrease in annual mean concentration at a receptor which does not constitute a neutral effect.
Neutral effect	Where there is a change in concentration at a receptor of: • 5% or less where the opening year, without the proposed scheme annual mean concentration is 75% or less of the standard; or • 1% or less where the opening year, without the proposed scheme annual mean concentration is 94% or less of the standard.
Negative effect	Where there is an increase in annual mean concentration at a receptor which does not constitute a neutral effect.

Table 23-20: TII impact descriptors (2022).

Long term average concentration at receptor in assessment year	% change in concentration relative to Air Quality Standard 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

23.10 Assessment of significance

The potential impacts arising from the construction, operational and maintenance and decommissioning phases of the Project are listed in Table 23-9, along with the project design parameters against which each impact has been assessed. A description of the potential effect on air quality receptors caused by each identified impact is given below.

23.10.1 Fugitive dust generation from construction activities associated with the onshore infrastructure

Construction phase

Fugitive dust is considered a potential impact to air quality from the activities associated with the construction and decommissioning phases of the onshore infrastructure of the Project. Construction and decommissioning activity by its nature has the potential to generate dust.

Fugitive dust dispersion has the potential to cause local impacts through dust nuisance to the nearest sensitive receptors and also sensitive ecosystems. The main impact is dis-amenity and nuisance due to dust deposition. Other impacts of fugitive dust include deposition on sensitive vegetation and crops. The potential for dust generation associated with the Project has been assessed based on a review of the proposed construction methodologies and the proximity of these activities to sensitive receptors.

The activities and operations associated with the construction (and decommissioning) phases of the Project have the potential to produce quantities of dust. The extent and nature of potential dust arisings is dependent on the nature of materials being used (soils, gravel, sands, silts etc.) and the nature of the operations. Additionally, the potential for the dispersion and deposition of fugitive dusts is dependent on metrological factors such as rainfall, and wind direction and speed, with impacts experienced more commonly in dry weather conditions.

The greatest potential impact on air quality during the construction phase is from construction dust emissions, PM_{10} and $PM_{2.5}$ emissions and the potential for nuisance dust. Dust is characterised as encompassing particulate matter with a particle size of between 1 and 75 microns (1 – 75 µm), therefore includes both PM_{10} and $PM_{2.5}$. Deposition typically occurs in close proximity to each site and potential impacts generally occur within 350 m of the route used by construction vehicles on the public road, and 500 m from the site entrance.

Large particle sizes (greater than 75 µm) fall rapidly out of atmospheric suspension and are subsequently deposited in close proximity to the source. Particle sizes of less than 75 µm are of interest as these can remain airborne for greater distances and give rise to the potential dust nuisance at the sensitive receptors.

This section of the chapter provides an overview of the typical activities that have potential for dust impacts during the construction phase of the Scheme. The potential for dust emissions due to construction can vary substantially day to day and are strongly influenced by the level of activity, the specific operations, and the prevailing meteorological conditions. While each individual site compound will differ, the processes that have the potential for the generation of construction dust will be similar. The following operations are the main dust generating sources or activities:

- Vegetation clearance – removes grass and other soil covering;
- Demolition – demolition during construction will be limited to the removal of an existing pylon within the agricultural land at the onshore substation site.
- Movement of trucks along paved public roads – potential of track-out of dust on vehicle tyres from construction sites or resuspension of dust;
- Movement of trucks along unpaved haul roads (this will only be relevant for a number of sites) – potential for resuspension of dust as vehicles move around the site;
- Extraction of material – works will be broken down into different types however all will involve the movement of potentially dusty material which has the potential to generate dust; and
- Stockpiling of material – stockpiles have the potential to generate dust due to dry material movement and wind erosion.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generation at each site needs to be taken into account in conjunction with the previously established sensitivity of the area. The construction areas considered in this analysis include the following:

- Landfall location approximately 700 m south of Dunany Point (works and temporary construction compounds);

- 20.1 km onshore cable route which will be laid in a trench of approximately 1 m width and is principally located along public roads (works);
- Onshore substation site will be located in an agricultural field in the townland of Stickillin (works and temporary construction compounds);
- Temporary construction compounds at River Dee at Richardstown (HDD Compound);
- Temporary construction compounds at the M1/Railway crossings (Storage and HDD compounds);
- Temporary construction compounds at the River Dee at Drumcar (HDD Compound);
- Temporary construction compound adjacent to JB17 (storage); and
- Temporary construction compound at the Port Stream at Togher (HDD Compound).

Using the appraisal criteria for the assessment of risk at sensitive receptors, a summary of dust emission magnitudes from the main construction areas is shown in Table 23-21.

The resultant requirement levels (i.e. high, medium or low levels of mitigation) for mitigation with respect to nuisance dust, health impacts and ecological impacts are shown in Table 23-22 to Table 23-25.

Table 23-21: Summary of emission magnitude.

Location	Demolition	Earthworks	Construction	Track-out
Landfall location	Negligible	Small	Small	Small
Onshore cable route	Negligible	Small	Small	Small
Onshore substation site	Negligible	Small	Small	Small
River Dee at Richardstown	Negligible	Small	Small	Small
M1/Railway	Negligible	Small	Small	Small
River Dee at Drumcar	Negligible	Small	Small	Small
Adjacent to JB17	Negligible	Small	Small	Small
Port Stream at Togher	Negligible	Small	Small	Small

Table 23-22: Summary of demolition risk to define site-specific mitigation.

Location	Dust nuisance risk	Human health risk	Sensitive ecology risk
Landfall location	Negligible	Negligible	Negligible
Onshore cable route	Negligible	Negligible	Negligible
Onshore substation site	Negligible	Negligible	Negligible
River Dee at Richardstown	Negligible	Negligible	Negligible
M1/Railway	Negligible	Negligible	Negligible
River Dee at Drumcar	Negligible	Negligible	Negligible
Adjacent to JB17	Negligible	Negligible	Negligible
Port Stream at Togher	Negligible	Negligible	Negligible

Table 23-23: Summary of earthworks risk to define site-specific mitigation.

Location	Dust nuisance risk	Human health risk	Sensitive ecology risk
Landfall location	Low risk	Negligible	Negligible

Location	Dust nuisance risk	Human health risk	Sensitive ecology risk
Onshore cable route	Low risk	Negligible	Negligible
Onshore substation site	Low risk	Negligible	Negligible
River Dee at Richardstown	Low risk	Negligible	Negligible
M1/Railway	Low risk	Negligible	Negligible
River Dee at Drumcar	Low risk	Negligible	Negligible
Adjacent to JB17	Low risk	Negligible	Negligible
Port Stream at Togher	Low risk	Negligible	Negligible

Table 23-24: Summary of construction risk to define site-specific mitigation.

Location	Dust nuisance risk	Human health risk	Sensitive ecology risk
Landfall location	Negligible	Negligible	Negligible
Onshore cable route	Negligible	Negligible	Negligible
Onshore substation site	Low risk	Negligible	Negligible
River Dee at Richardstown	Negligible	Negligible	Negligible
M1/Railway	Negligible	Negligible	Negligible
River Dee at Drumcar	Negligible	Negligible	Negligible
Adjacent to JB17	Negligible	Negligible	Negligible
Port Stream at Togher	Negligible	Negligible	Negligible

Table 23-25: Summary of track-out risk to define site-specific mitigation.

Location	Dust nuisance risk	Human health risk	Sensitive ecology risk
Landfall location	Low risk	Negligible	Negligible
Onshore cable route	Low risk	Negligible	Negligible
Onshore substation site	Low risk	Negligible	Negligible
River Dee at Richardstown	Low risk	Negligible	Negligible
M1/Railway	Low risk	Negligible	Negligible
River Dee at Drumcar	Low risk	Negligible	Negligible
Adjacent to JB17	Low risk	Negligible	Negligible
Port Stream at Togher	Low risk	Negligible	Negligible

The risk of dust impacts arising from the Proposed Scheme are summarised in Table 23-26. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring.

The impacts associated with construction phase dust emissions are considered short term and therefore a series of best practice mitigation is presented in section 23.10.3.

Table 23-26: Summary overall dust impact risk to define site-specific mitigation.

Location	Worst case dust risk
Landfall location	Low risk
Onshore cable corridor	Low risk
Onshore substation site	Low risk
River Dee at Richardstown	Low risk
M1/Railway	Low risk
River Dee at Drumcar	Low risk
Adjacent to JB17	Low risk
Port Stream at Togher	Low risk

Magnitude of impact

During the construction phase of the Project, there may be intermittent temporary to short-term slight-moderate effects to ambient dust levels in proximity to the construction areas (onshore cable route, onshore substation site, landfall location).

The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the affected receptors directly. The magnitude is therefore, considered to be low.

Sensitivity of the receptor

The predominate land use in the vicinity of the Project is agricultural. However, there are commercial and residential property receptors located within 100 m of the construction areas of the onshore components of the Project. The sensitivity of the receptor is therefore considered to be low.

Significance of the effect

Any commercial or residential properties within 100 m of these areas will likely experience an intermittent and temporary low impact from construction dust during the construction programme.

Overall, the magnitude of the impact is deemed to be low, and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **imperceptible significance**, which is not significant in EIA terms.

Decommissioning phase

To minimise the environmental disturbance during decommissioning phase, it is proposed that the onshore cables would be removed by disconnecting each section at the joint bay and pulling them through the cable ducts. The structures of the joint bays will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current use. Therefore, there will be minimal potential for construction works in this regard which would result in impacts in terms of fugitive dust along the onshore cable route during this phase.

Magnitude of impact

The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the affected receptors directly and will occur at a magnitude much lower than that described under the construction phase. The magnitude is therefore, considered to be negligible.

Sensitivity of the receptor

The affected receptors are deemed to be of low vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be negligible.

Significance of the effect

There may be works associated with the removal of some infrastructure and the breaking up of foundations at the onshore substation site. Given the limited works proposed, no significant fugitive dust impacts are predicted during the decommissioning phase of the Project. Therefore the effect will be of **imperceptible significance**.

23.10.2 The increased vehicle emissions from traffic generation associated with the Project

Construction phase

Road traffic associated with the Project can impact directly on local air quality due to increased levels of emissions from additional vehicles on the road network within the Air Quality Study Area. Any sensitive receptors that are located adjacent to the local road networks, the onshore cable route and construction compounds sites may experience the impacts to local air quality.

The Department for Transport (2007) state that air quality impacts from changes in road traffic volumes may be significant and should be assessed where the traffic volumes show an increase or decrease in traffic emissions of 5-10% or more.

The traffic analysis for the construction phase undertaken for the Project is shown in chapter 28: Traffic and Transport of this EIAR. This includes baseline traffic analysis for eight separate sections of the existing road network within the Air Quality Study Area and projects the level of change associated with the construction phase of the Project (as outlined in Table 23-27).

The results in Table 23-27 indicate that with this low level of construction traffic generated there is only potential for a significant increase (i.e. more than 5-10% Annual Average Daily Traffic (AADT)) in road traffic on the L-2221, the L2240 (east of the R166) and the L-6238 Castlethomas/Drumcar Road by virtue of the low baseline levels on these local roads. All other local roads and the national road (N33) will not experience a change in road traffic that could result in a significant impact for air quality and hence these roads are scoped out of further assessment.

Table 23-27: Project change in road traffic during construction phase.

Road	Baseline 2019		Construction phase		% Change
	(AADT)	HV (%)	(AADT)	HV (%)	
L-2221	248	(1%)	282	(10.6%)	+14.9%
L-2240 (east of R166)	489	(1.9%)	523	(7.1%)	+8.1%
L-2240 (west of R166)	765	(1%)	799	(4.5%)	+5.3%
L-2239 (west of Keenans Cross)	1,325	(1.5%)	1,359	(3.5%)	+3.1%
L-6238 Castlethomas/Drumcar Road	444	(4.6%)	478	(10.1%)	+8.8%
L-2226 (east of the R132)	1,668	(4.2%)	1,702	(5.8%)	+2.5%
L-2226 (west of the R132)	2,396	(3.6%)	2,430	(4.7%)	+1.7%
N33	13,061	(5.8%)	13,131	(6.2%)	+1.5%

Given the potential for increases in traffic with a potential to impact air quality on three local roads, an assessment of the potential impacts to the following receptors has been undertaken in accordance with the procedures outlined in the TII Guidance:

- L-2221 – There are approximately 21 residential properties located on this route within the Air Quality Study Area and the property located closest to the road (at approximately 8 m from the road) has been assessed as the worst-case receptor for this road link during construction;

- L-2240 (east of R166) - There are approximately 21 residential properties located on this route within the Air Quality Study Area and the property located closest to the road (at approximately 8 m from the road) has been assessed as the worst-case receptor for this road link during construction; and

- L-6238 Castlethomas/Drumcar Road - There are approximately 22 residential properties located on this route within the Air Quality Study Area and the property located closest to the road (at approximately 6 m from the road) has been assessed as the worst-case receptor for this road link during construction.

The results of the analysis for these receptors along these routes are presented in Table 23-28.

Table 23-28: Local impact to air quality as a result of construction traffic.

Route	Scenario	Nitrogen dioxide (µg/m^3)	Particulates (PM_{10}) (µg/m^3)	
		Annual average NO_2	Annual average PM_{10}	No. of days > 50 µg/m^3
	Background air quality (2018 data from Kilkitt)			
L-2221	Do-nothing	4.10	9.02	0.00
	Do-something	4.17	9.03	0.00
L-2240 (east of R166)	Do-nothing	4.25	9.04	0.00
	Do-something	4.31	9.05	0.00
L-6238 Castlethomas/Drumcar Road	Do-nothing	4.14	9.03	0.00
	Do-something	4.21	9.04	0.00
Statutory limits		**40**	**40**	**25**
WHO guidelines		**10**	**15**	**-**

The results indicate that all levels of pollutants are predicted to remain within the limits for the protection of human health and the WHO guidelines along each route in a typical scenario year both with and without the proposed construction traffic. Using the significance criteria, the predicted increases in NO_2 and PM_{10} associated with the Project construction traffic relative to the background air quality and the 'Do-nothing' scenario, are classed as imperceptible. While the levels remain below the relevant limits, these increases and the air quality impact from this traffic are classed as **negligible**.

Magnitude of impact

The impact is predicted to be of local spatial extent, short term duration, intermittent and low reversibility. It is predicted that the impact will affect the receptors directly. The magnitude is therefore, considered to be negligible.

Sensitivity of the receptor

The receptors on each of the local roads assessed are deemed to be of high vulnerability, moderate recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the effect

Overall, the magnitude of the impact is deemed to be negligible, and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **imperceptible significance**, which is not significant in EIA terms.

Decommissioning phase

During the decommissioning phase, it is proposed that the onshore cable will be left in place in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. The structures of the joint bays may be removed only if it is feasible with minimal environmental disturbance.

The traffic and transport assessment (see chapter 28: Traffic and Transport) has assumed that traffic volumes associated with decommissioning of the onshore infrastructure will be the same as for the construction phase.

The significance of the effect on air quality from road traffic during the decommissioning phase will be similar or less than that associated with the construction phase. The effect will therefore be of **imperceptible significance**.

23.10.3 Mitigation and residual effects

The assessment of impacts has concluded that there are no significant effects with the implementation of the measures included in the Project (as outlined in section 23.8.2). Therefore, no measures over those outlined in section 23.8.2 are required.

With the implementation of the measures included in the Project, the residual effects are as outlined in the assessment provided in section 23.10.

23.10.4 Future monitoring

Table 23-29 below outlines the proposed monitoring commitments for air quality.

Table 23-29: Monitoring commitments for air quality.

Environmental effect	Monitoring commitment
Construction dust	The construction contractor will be required to monitor monthly dust deposition levels each month for the duration of construction for comparison with the guideline of 350 mg/m^2/day (for non-hazardous dusts). This monitoring will be carried out at a series of suitable locations including sensitive receptors along the route and at the site compounds. Where dust levels are measured to be above this guideline the mitigation measures in the area will be reviewed as part of the dust minimisation plan.

23.11 Cumulative Impact Assessment (CIA)

The Cumulative Impact Assessment (CIA) considers the impact associated with the Project together with other projects within the ZoI of the Project. The projects selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise (see volume 2A, appendix 3-1: CIA Screening Annex). Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

The approach to CIA examines the effects of the Project alongside the following projects if they fall within the ZoI for air quality:

- Other projects with consent but not yet constructed/construction not completed;
- Other projects in a consent application process but not yet determined (including planning applications, foreshore lease/licence applications, Dumping at Sea Permit applications;
- Other projects currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact; and
- Projects, which satisfy the definition of ‘relevant maritime usage’ under the Maritime Area Planning Act (2021) (i.e. wind farm projects designated as ‘Relevant Projects’ or ‘Phase 1 Projects’) including Arklow Bank II, Codling Wind Park (I and II), Dublin Array and North Irish Sea Array.

No projects were screened in for the CIA for air quality.

23.12 Transboundary effects

The potential effects of the Project on air quality are considered to be of local extent therefore, there is no potential for significant transboundary effects on air quality from the Project upon the interests of the UK or other EEA States.

23.13 Interactions

A description of the likely interactions arising from the Project on air quality is provided in volume 2C, chapter 32: Interactions.

23.14 Summary of impacts, mitigation measures and residual effects

Information on air quality was established through a detailed review of existing studies and datasets. Table 23-30 presents a summary of the potential impacts, mitigation measures and residual effects.

The impacts assessed include:

- Fugitive dust; and
- Road traffic emissions.

As set out in detail in this chapter it is concluded in relation to the potential for the Project to have a significant effect on air quality, that no significant impacts are predicted.

While the magnitude of changes as a result of construction dusts is low, it has been assessed that construction dust may pose a low risk of adverse impact during construction. These will be mitigated through good working practices and no significant adverse impact is predicted for the construction phase. Road traffic associated with the construction phase of the Project can impact directly on local air quality due to increased levels of emissions from additional vehicles on the road network within the Air Quality Study Area. Road traffic emissions will increase on the road network as a result of the construction phase of the Project with the magnitude of changes assessed as negligible. However, the impact to air quality for residential properties along these routes is classed as imperceptible.

No plans or projects were screened in for the CIA for air quality and no potential transboundary impacts have been identified in regard to effects of the Project.

Table 23-30: Summary of potential environment effects, mitigation and monitoring.

Description of impact	Phase			Measures included in the Project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Further measures	Residual effect	Proposed monitoring
	C	O	D							
Fugitive dust generation from construction activities associated with the onshore infrastructure	✓	✗	✓	**Construction phase:** • Site roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced roads shall be restricted to essential site traffic only; • Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions (also applies to vehicles delivering material with dust potential); • All vehicles exiting the site shall make use of a wheel wash facility prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads; • Wheel washes should be self-contained systems that do not require discharge of the wastewater to water bodies; • Public roads outside the site shall be regularly inspected for cleanliness and cleaned as necessary;	C: Low D: Negligible	C: Low D: Negligible	C: Imperceptible D: Imperceptible	None	Imperceptible	**Construction phase:** The construction Contractor will be required to monitor monthly dust deposition levels each month for the duration of construction for comparison with the guideline of 350 mg/m^2/day (for non-hazardous dusts). This monitoring should be carried out at a series of suitable locations including sensitive receptors around the construction compounds. Where construction compounds are in close proximity to sensitive receptors monitoring will be undertaken. These sensitive receptors include: • Landfall location; • Onshore cable route; • Onshore substation site; • River Dee at Richardstown; • M1/Railway; • River Dee at Drumcar; • Adjacent to JB17; and • Port Stream at Togher. Where dust levels are measured to be above this guideline the mitigation measures in the area will be reviewed as part of the CEMP.

Description of impact	Phase			Measures included in the Project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Further measures	Residual effect	Proposed monitoring
	C	O	D							
				• Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind; • Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods; • All vehicles which present a risk of spillage of materials, while either delivering or removing materials, will be loaded in such a way as to prevent spillage on to the public road; and The contractor will be required to ensure that all vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum.						
Increased vehicle emissions from traffic generation associated with the Project	✓	✗	✓	Measures included as part of the Project regarding traffic are outlined in chapter 28: Traffic and Transport	C: Negligible D: Negligible	C: Medium D: Negligible	C: Imperceptible D: Imperceptible	None	None	None

References

DECC (2017). Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects.

DECC (2021). National Air Pollution Control Programme Report, Department of the Environment, Climate and Communications.

DECC (2023). Clean Air Strategy for Ireland, Department of the Environment, Climate and Communications.

DEFRA (2022). Greenhouse Gas Reporting Conversion Factors 2022: Condensed Set, Department for Environment, Food and Rural Affairs.

EPA (2015). Advice Notes for Preparing Environmental Impact Statements, Environmental Protection Agency.

EPA (2018). Air Quality in Ireland 2017, Environmental Protection Agency.

EPA (2019). Air Quality in Ireland 2018, Environmental Protection Agency.

EPA (2021). Air Quality in Ireland 2020, Environmental Protection Agency.

EPA (2022a). Air Quality in Ireland 2021 – Indicators of Air Quality. Environmental Protection Agency.

EPA (2022b). Air Quality Report 2021 – Supplemental information.

EPA (2022c). Ireland's Informative Inventory Report 2021, Environmental Protection Agency.

EPA (2022d). Guidelines on the Information to be Contained in Environmental Impact Statements, Environmental Protection Agency.

EPA (2021a). Ireland's Air Pollutant Emissions 1990-2030.

EPA (2021b). Air Quality in Ireland 2020 – Indicators of Air Quality.

EPA (2021c). Air Quality Report 2020 – Supplemental information.

EPA (2020a). Air Quality in Ireland 2019 – Indicators of Air Quality.

EPA (2020b). Air Quality in Ireland 2019 – Supplemental information.

EPA (2019a) Air Quality in Ireland 2018 – Indicators of Air Quality.

EPA (2019b). Air Quality in Ireland 2018 – Supplemental information.

EPA (2018a). Air Quality in Ireland 2017 – Indicators of Air Quality.

EPA (2018b). Air Quality in Ireland 2017 – Supplemental information.

Institute of Air Quality Management (IAQM) (2014). Guidance on the assessment of dust from demolition and construction, Version 1.1, February 2014.

TII (2022). Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document PE-ENV-01106 (December 2022).

TII (2022). Road Emissions Model (REM): Model Development Report GE-ENV-01107 (December 2022).

WHO (2021). WHO Global Air Quality Guidelines: Particulate Matter (PM2.5 and PM10), Ozone, Nitrogen Dioxide, Sulphur Dioxide and Carbon Monoxide.