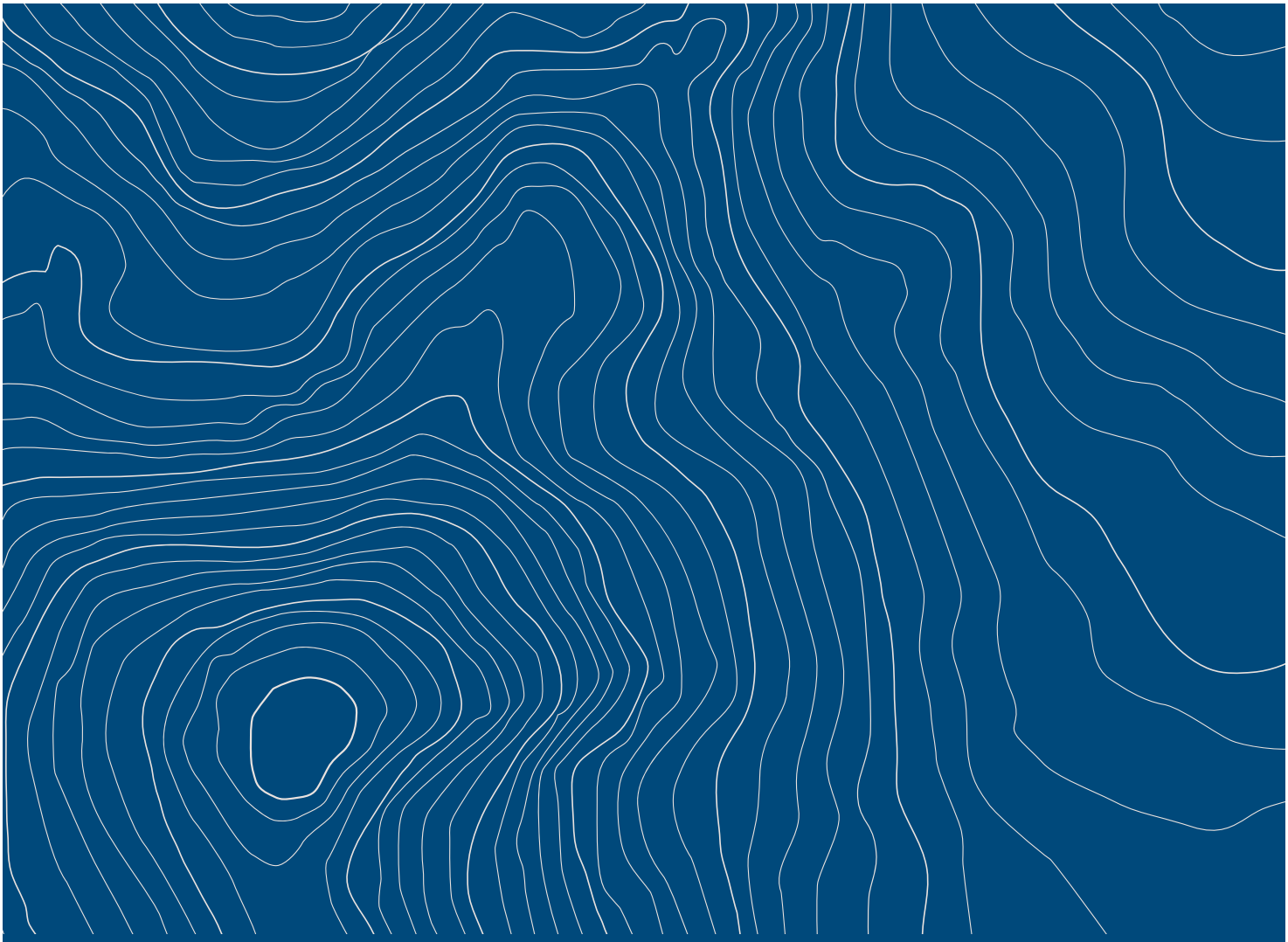

DublinArray
Generation for generations

EIAR Volume 5: Onshore Infrastructure Assessment Chapters
Chapter 10: Air Quality

Kish Offshore Wind Ltd

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Dublin Array Offshore Wind Farm

Environmental Impact Assessment Report

Volume 5, Chapter 10: Air Quality

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Tables

Glossary

Term	Definition
Air quality standard	Regulatory limits on the concentration of pollutants in the air, set to protect human health and the environment.
Ambient air quality	The quality of the air in the surrounding environment, typically measured to assess pollution levels and compliance with air quality standards.
Average Annual Daily Traffic	A measure used in transportation planning and traffic engineering to represent the average number of vehicles passing a specific point on a road each day over the course of a year.
Background Concentration	The level of a pollutant in the air, measured at a location not influenced by specific sources of pollution, used as a reference point.
Dispersion Modeling	A mathematical simulation of how pollutants disperse in the atmosphere, used to predict air quality impacts from various sources.
Dust emissions	Particulate matter released into the air from various sources, including construction activities, which can affect air quality and human health.
Dust soiling	The deposition of dust on surfaces, which can affect the appearance and function of buildings, vehicles, and other structures.
Fugitive dust emissions	Dust particles that are not captured by a control device and are released into the air from construction activities, traffic, or other sources.
Greenhouse Gas (GHG)	Gases that trap heat in the atmosphere, contributing to global warming and climate change. Common GHGs include CO_2, methane (CH_4), and nitrous oxide (N_2O).
Meteorological conditions	The atmospheric factors and weather elements at a given time and place, including temperature, humidity, wind speed and direction, air pressure, precipitation, and cloud cover. These conditions influence climate patterns, air quality, and environmental assessments.
Particulate matter (PM)	Tiny particles suspended in the air, which can be harmful to human health when inhaled. PM is often categorised by size, such as PM_{10} and $PM_{2.5}$.
Sensitive receptors	Sensitive receptor locations are defined by TII guidance as 'Residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present.
Trackout	Trackout refers to the process where dirt, mud, and other debris are carried out of the site by vehicles, leading to dust and sediment being deposited on nearby roads and areas.
Trenchless Crossing	A construction technique used to install underground utilities without digging a continuous trench, often used to minimise surface disruption.
Zone of Influence (ZoI)	The area within which a project or activity is expected to have an impact on the environment.

Acronyms

Term	Definition
AADT	Annual Average Daily Traffic
ABP	An Bord Pleanála
CAFE	Cleaner Air for Europe
CEMP	Construction Environmental Management Plan
CO	Carbon Monoxide
CO_2	Carbon Dioxide
DECC	Department of the Environment, Climate and Communications
DLRCC	Dún Laoghaire-Rathdown County Council
EC	European Commission
ECR	Export Cable Route
ECRIPP	East Coast Railway Infrastructure Protection Project
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EU	European Union
HGV	Heavy Goods Vehicle
HSA	Health and Safety Authority
HSE	Health Service Executive
IAQM	Institute of Air Quality Management
LIBS	Locally Important Biodiversity Sites
NH_3	Ammonia
NHA	Natural Heritage Area
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NRA	National Roads Authority
OES	Onshore Electrical System
O&M	Operation and maintenance
OSS	Onshore Substation

Term	Definition
pNHA	Proposed Natural Heritage Area
PM	Particulate Matter
PM_{10}	Particulate Matter with a diameter less than 10 microns
$PM_{2.5}$	Particulate Matter with a diameter less than 2.5 microns
SDZ	Strategic Development Zone
SO_2	Sulphur Dioxide
TCC	Temporary Construction Compounds
TII	Transport Infrastructure Ireland
TJB	Transition Joint Bay
WHO	World Health Organisation

Units

Term	Definition
µg/m³	Micrograms per cubic metre
ppb	Parts per billion, a unit of measurement for the concentration of a substance in the air or water.
ppm	Parts per million, a unit of measurement for the concentration of a substance in the air or water.
m/s	Metres per second, a unit of measurement for wind speed.
km/h	Kilometres per hour, a unit of measurement for wind speed.
mg/m³	Milligrams per cubic metre, a unit of measurement for the concentration of pollutants in the air.
g/km	Grams per kilometre, a unit of measurement for the emission of pollutants per kilometre traveled by a vehicle.
dB(A)	A-weighted decibels, a unit of measurement for sound levels, adjusted to reflect the sensitivity of the human ear.
m²	Square metres, a unit of measurement for area.
ha	Hectares, a unit of measurement for area, commonly used in land measurement (1 hectare = 10,000 square metres).
m³	Cubic metres, a unit of measurement for volume.
kg	Kilograms, a unit of measurement for mass.
t	Tonnes, a unit of measurement for mass (1 tonne = 1,000 kilograms).
kW	Kilowatts, a unit of measurement for power.
MW	Megawatts, a unit of measurement for power (1 megawatt = 1,000 kilowatts).
GWh	Gigawatt-hours, a unit of measurement for energy (1 gigawatt-hour = 1,000 megawatt-hours).

10 Air Quality

10.1 Introduction

10.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) assesses the impacts on air quality receptors arising from the construction, operation and decommissioning of the Dublin Array Offshore Wind Farm (Dublin Array) onshore infrastructure as described in detail in Volume 2, Chapter 6: Project Description (hereafter referred to as the Project Description chapter). The onshore infrastructure includes the proposed Operation and Maintenance (O&M) Base and the Onshore Electrical System (OES) comprising the Landfall Site, the Onshore Export Cable Route (Onshore ECR), and the Onshore Substation (OSS). Air Quality effects from offshore operations is scoped out – see section 10.7.

10.1.2 For ease of reference in the EIAR technical chapters, the Onshore ECR has been split into seven sectors: Sector 1 through to Sector 7. This EIAR chapter should be read in conjunction with the following documents included within the EIAR, due to interactions between the technical aspects:

- Volume 3: Chapter 18: Climate Change (hereafter referred to as the Climate Change chapter);
- Volume 5: Chapter 2: Biodiversity (hereafter referred to as the Biodiversity chapter);
- Volume 5: Chapter 3: Land, Soils and Geology (hereafter referred to as the Land, Soils and Geology chapter)
- Volume 5, Chapter 6: Traffic and Transport (hereafter referred to as the Traffic and Transport chapter); and
- Volume 5, Chapter 9: Human Health (hereafter referred to as the Human Health chapter).

10.2 Regulatory background

10.2.1 Volume 3, Chapter 2: Consents, Legislation, Policy and Guidance outlines the guidelines and standards established by the European Union (EU) and national legislation focusing on the protection of human health, vegetation, and ecosystems.

10.2.2 Table 1 outlines the relevant policy, legislation and guidance for the assessment of air quality impacts arising from Dublin Array.

Table 1 Relevant policy, legislation and guidance for air quality

Policy/legislation/publisher	Name/reference/key provisions	What is covered/section where provision is addressed
Statutory		
Legislation		
The European Parliament and the Council of the European Union, 2014	Directive 2014/52/EU of the European Parliament and of The Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (The EIA Directive).	Article 3 states that the Environmental Impact Assessment will identify, describe and assess the direct and indirect significant effects of a project on the following factors: c) air and climate Annex IV states that the description of the project will include an estimate by type and quantity of expected residues and emissions. In addition, a description of the factors likely to be significantly affected by the project such as air and climate (for example greenhouse gas emissions, impacts relevant to adaptation). The assessment of air quality impacts arising as a result of the Dublin Array onshore infrastructure is included in this chapter. The assessment of climate effects is set out in the Climate Change chapter.
European Commission, 1996	The Air Quality Framework Directive (96/62/EC)	Establishes fundamental principles for air quality management. The Air Quality Framework Directive (96/62/EC) is complemented by four daughter directives that set specific limits and targets for various pollutants: 1. Directive 1999/30/EC: Relates to limit values for sulphur dioxide, nitrogen dioxide, and oxides of nitrogen, particulate matter (PM), and lead in ambient air.

Policy/legislation/publisher	Name/reference/key provisions	What is covered/section where provision is addressed
		2. Directive 2000/69/EC: Sets limit values for benzene and carbon monoxide in ambient air. 3. Directive 2002/3/EC: Concerns ozone in ambient air. 4. Directive 2004/107/EC: Addresses arsenic, cadmium, mercury, nickel, and polycyclic aromatic hydrocarbons in ambient air. These directives collectively aim to improve air quality and protect human health and the environment.
European Parliament and of the Council, 2008	Clean Air for Europe Directive (CAFE Directive) (2008/50/EC)	The Cleaner Air for Europe (CAFE) Directive replaced the initial framework directive and the first three daughter directives, with the fourth daughter directive (2004/107/EC) set to be integrated later. The Directive details the specified limits for air pollutants for the protection of human health. The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) – see below. The assessment approach takes due cognisance of the Directive.
Irish Statue Book 2011	Air Pollution Act 1987 (as amended) (S.I. No. 270/2011)	The Air Pollution Act 1987 (as amended) provides the framework for controlling and preventing air pollution in Ireland. It sets out measures for regulating emissions from industrial plants, managing air quality, and empowering local authorities to take action against air pollution. The Act also includes provisions for licensing, monitoring, and enforcing air quality standards.
Irish Statue Book 2011	Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011)	The Air Quality Standards Regulations:

Policy/legislation/publisher	Name/reference/key provisions	What is covered/section where provision is addressed
		▪ establish limit values and, as appropriate, alert thresholds for concentrations of certain pollutants in ambient air intended to avoid, prevent or reduce harmful effects on human health and the environment as a whole; ▪ provide for the assessment of concentrations of certain pollutants in ambient air on the basis of methods and criteria common to the Member States of the European Communities; and ▪ provide for the obtaining of adequate information on concentrations of certain pollutants in ambient air and ensure that it is made available to the public, inter alia by means of alert thresholds. The assessment approach takes due cognisance of these Standards.
Irish Statue Book 2022	Ambient Air Quality Standards Regulations 2022 S.I. No. 739/2022	The Regulations implement Directive 2008/50/EC and set limits for pollutants like particulate matter with a diameter less than 2.5 microns ($PM_{2.5}$), particulate matter with a diameter less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), and sulphur dioxide (SO_2). They aim to protect human health and the environment by establishing monitoring, reporting, and compliance mechanisms for air quality standard. The assessment approach takes due cognisance of these Standards. The Air Quality Standards set out therein are presented in this section below.
Irish Statue Book 2024	Waste Management Act 1996 (as amended) S.I. No. 660 of 2024	This Waste Management Act 1996 (as amended) makes provision in relation to the prevention, management and

Policy/legislation/publisher	Name/reference/key provisions	What is covered/section where provision is addressed
		control of waste; to give effect to provisions of certain acts adopted by institutions of the European Communities in respect of those matters; to amend the Environmental Protection Agency Act, 1992, and to repeal certain enactments and to provide for related matters.
Planning Policy and Development Control		
DECC, 2023	Clean Air Strategy for Ireland 2023	The Strategy aims to reduce air pollution and promote cleaner air through integrated government measures. It sets targets, enhances regulation, improves enforcement, and raises public awareness to protect health and the environment. The assessment has taken due cognisance of the Strategy.
Dún Laoghaire-Rathdown County Council, 2022	Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028	Policy EI20: air and noise pollution states that it is Council policy to implement the provisions of National and European Union (EU) Directives on air and noise pollution and other relevant legislative requirements in conjunction with other agencies as appropriate. Policy EI14: Air and Noise Pollution states that *'it is a policy objective to implement the provisions of national and EU Directives on air and noise pollution and other relevant legislative requirements in conjunction with other agencies as appropriate'*. The assessment has taken due cognisance of these policies.
Guidelines and technical standards		
WHO, 2006	Air Quality Guidelines: Global Update 2005. Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide	The WHO Air Quality Guidelines 2006 cover recommended limits for particulate matter (PM_{10}, $PM_{2.5}$), ozone (O_3), NO_2, and SO_2 to protect human health and the environment.

Policy/legislation/publisher	Name/reference/key provisions	What is covered/section where provision is addressed
		The Clean Air Strategy for Ireland 2023 incorporates these. The targets have been incorporated into the methodology which is set out in section 10.4.
WHO, 2021	WHO Global Air Quality Guidelines	The WHO 2021 Air Quality Guidelines provide updated recommended limits for key air pollutants, including $PM_{2.5}$, PM_{10}, O_3, NO_2, SO_2 and carbon monoxide (CO). These guidelines aim to protect human health by reducing exposure to harmful air pollutants and guiding policy and regulatory actions globally. The Clean Air Strategy for Ireland 2023 incorporates these. The targets have been incorporated into the methodology which is set out in section 10.4.
EPA, 2022	Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (EPA, 2022)	These Guidelines apply to the preparation of Environmental Impact Assessment Reports undertaken in the State (Ireland). The overall EIA approach follows the guidelines set out in the document.
Institute of Air Quality Management (IAQM), 2024	Assessment of Dust from Demolition and Construction sites (updated in 2024) (hereafter referred to as the IAQM Guidelines)	This guidance puts emphasis on classifying demolition and construction sites according to the risk of impacts (relating to construction dust) and identifying mitigation measures appropriate to the risk. The IAQM guidance provides a method for classifying the significance of effect from construction activities based on the 'dust magnitude' (high, medium or low) and proximity of the site to the closest receptors. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented.

Policy/legislation/publisher	Name/reference/key provisions	What is covered/section where provision is addressed
		The guidance notes that once the appropriate mitigation measures are applied, in most cases the resulting dust impacts can be reduced to negligible levels. The Assessment Methodology (section 10.4) takes due cognisance of this guidance.
Institute of Air Quality Management, 2018	Air Quality Monitoring in the vicinity of Demolition and Construction Sites	This document provides guidance on air quality monitoring in the vicinity of demolition and construction sites. The Assessment Methodology (section 10.4) incorporates this guidance.
Transport Infrastructure Ireland (TIL) , 2022	Air Quality Assessment of Proposed National Roads – Standard	The document outlines methodologies for assessing air quality impacts of national road projects, ensuring compliance with legislation and guiding baseline studies, local/regional assessments, construction impacts, and mitigation measures. Whilst the guidance specifically applies to road projects it can be used for other infrastructure projects also. The guidance sets out criteria for circumstances where a detailed air quality assessment for vehicle emissions will be necessary. The screening of the need for a detailed air quality assessment for the Dublin Array construction phase and operational phase has followed the guidance.

Ambient Air Quality Standards

10.2.3 The applicable air quality standards in Ireland are the Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022), which are set out above, incorporates EU Council Directive 2008/50/EC (on ambient air quality and Cleaner Air for Europe (CAFE)) (CAFE Directive).

10.2.4 The limit values or 'Air Quality Standards' set out in the Ambient Air Quality Standards Regulations and the CAFE Directive are presented in Table 2.

Table 2 Air quality limit values set out in the Ambient Air Quality Standards Regulations and the CAFE Directive

Pollutant	Limit value objective	Averaging period	Limit value (µg/m³)	Limit value (ppb)	Basis of application
NO_2	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year
NO_2	Protection of human health	Calendar year	40	21	Annual mean
$NO + NO_2$	Protection of ecosystems	Calendar year	30	16	Annual mean
PM_{10}	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year
PM_{10}	Protection of human health	Calendar year	40	-	Annual mean
$PM_{2.5}$ - Stage 1	Protection of human health	Calendar year	25	-	Annual mean

10.2.5 The World Health Organisation (WHO) has issued Air Quality Guidelines to safeguard human health, referred to as the WHO Guidelines (WHO, 2006; WHO, 2021). These guidelines specify values for NO_2, PM_{10}, and $PM_{2.5}$.

10.2.6 The 2005 WHO Guideline values are stricter than the EU statutory limits for PM_{10} and $PM_{2.5}$, with the WHO 2021 updates further lowering the recommended concentrations. For NO_2, the compliance limit values are equivalent.

10.2.7 However, the WHO one-hour guideline value is an absolute limit, whereas the EU standards permit this limit to be exceeded for up to 18 hours per year without breaching the statutory limit. The WHO Guidelines acknowledge that these levels may be unattainable in some countries and offer interim targets for gradual achievement. These targets are designed for populations as a whole, rather than individual receptors.

10.2.8 The Clean Air Strategy for Ireland acknowledges the importance of aligning with the WHO air quality standards. It outlines a commitment to progressively achieve these standards through integrated government measures, enhanced regulation, and increased public awareness. The Strategy emphasises the need for continuous improvement in air quality to protect public health and the environment.

10.2.9 The Strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target (IT) 3 by 2026, the IT4 targets by 2030 and the final targets by 2040 (shown in Table 3).

10.2.10 The Strategy acknowledges that 'meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2'.

Table 3 WHO Air Quality Guidelines 2021 – Interim and final targets for different pollutants

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

10.3 Consultation

10.3.1 Table 4 sets out the key consultation responses received that is relevant to this topic.

Table 4 Summary of consultation relating to air quality

Date	Consultation type	Consultation and key issues raised	Section where provision is addressed
17 November 2020	Public Consultation Event – Autumn 2020	The Health and Safety Authority (HSA) raised that the proposed development (defined as a construction project in accordance with the 2013 Safety Health and Welfare at Work (Construction) Regulations) requires a competent Project Supervisor for the Design Process to be appointed to co-ordinate the safety aspects of the design.	Refer to Construction Environmental Management Plan (CEMP) (Volume 7, Appendix 8)

10.4 Methodology

10.4.1 The overall air quality assessment approach incorporates guidance set out in the following:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (EPA, 2022);
- Guidance on the assessment of dust from demolition and construction (IAQM, 2024) (hereafter referred to as the IAQM guidelines);
- The TII 'Air Quality Assessment of Proposed National Roads – Standard' (TII, 2022); and
- WHO Global Air Quality Guidelines (WHO, 2021).

10.4.2 These guidelines provide the basis for the methodology for the assessment, management and mitigation of air quality which can be adapted accordingly depending on the nature of the works.

Dust

10.4.3 Fugitives dust emissions arise when PM becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated PM_{10} and $PM_{2.5}$ concentrations and may also cause dust soiling. The amount of dust generated and emitted from a working site and the potential impact on the surrounding areas varies according to:

- The type and quantity of material and working methods;
- Distance between site activities and sensitive receptors[1]; and
- Climate/local meteorology and topography.

10.4.4 In relation to the Dublin Array onshore infrastructure the following activities have the potential to generate dust emissions:

- Earthworks including topsoil stockpiling (site preparation works, new roads construction);
- Construction operations and associated demobilisation;
- Trafficking by Heavy Goods Vehicles (HGVs) over paved/unpaved surfaces; and
- Demolition works (at the site of the O&M Base only).

1 Sensitive receptor locations are defined by TII guidance as 'Residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present'.

10.4.5 The focus of the assessment is the potential impact on local sensitive receptors of fugitive dust emissions and PM generated by the Dublin Array onshore infrastructure.

Need for the assessment (screening)

10.4.6 Once the potential for dust emissions has been established the IAQM guidelines recommends screening to determine if a detailed dust assessment is needed. This involves evaluating the project's scale and nature and considering factors like proximity to sensitive receptors and the potential for dust emissions. If significant impacts are likely, a detailed assessment is required.

10.4.7 Guidelines set out that an assessment will normally be required *inter alia* if there are human receptors within 350 m of the site boundary or within 50 m of the route(s) used by construction vehicles on public roads and up to 500 m from the site entrance.

10.4.8 In this instance, the closest residential properties are within 20 m of the Dublin Array onshore infrastructure. An air quality assessment for dust is therefore required.

Vehicle emissions

Construction phase

10.4.9 The construction stage trip generation traffic estimates were reviewed against the screening criteria set out in 'Air Quality Assessment of Proposed National Roads – Standard' (TII, 2022) to establish whether a detailed air quality assessment will be necessary for traffic emissions. The Standard contains the following screening criteria to determine if a detailed air quality assessment is necessary:

- Road alignment change of 5 m or more;
- Daily traffic flow changes by 1,000 Average Annual Daily Traffic (AADT) or more;
- HGVs flows change by 200 vehicles per day or more;
- Daily average speed changes by 10 km/h or more; or
- Peak hour speed changes by 20 km/h or more.

10.4.10 The Traffic and Transport Chapter assesses the predicted traffic generation arising from the Dublin Array construction phase. The chapter includes an assessment of the predicted change in traffic on roads that will be used as construction access routes during the construction phase. Using the conclusions from this chapter, the Dublin Array construction phase has been assessed against the screening criteria. This concludes:

- No road alignment changes will occur as a result of Dublin Array;
- Daily traffic flows will increase by a maximum of 169 AADT (Link 2 – Ballyogan Road), of which 31 will be HGVs;

- The largest increase in HGV flows will occur on the construction access route from the N11 to the Temporary Construction Compounds (TCCs) at the Landfall Site and Clifton Park where there will be an increase of 69 HGVs per day;
- Daily average speeds will not change;
- Peak hour speeds will not change.

10.4.11 Therefore, the construction phase does not meet any of the screening criteria and a detailed air quality assessment of construction phase traffic emissions is not required.

Operational phase

10.4.12 The operational phase stage trip generation traffic estimates were also reviewed against the screening criteria set out in 'Air Quality Assessment of Proposed National Roads – Standard' (TII, 2022) to establish whether a detailed air quality assessment would be necessary for traffic emissions. As set out earlier, the Standard contains the following screening criteria to determine if a detailed air quality assessment is necessary:

- Road alignment change of 5 m or more;
- Daily traffic flow changes by 1,000 Average Annual Daily Traffic (AADT) or more;
- HGVs flows change by 200 vehicles per day or more;
- Daily average speed changes by 10 km/h or more; or
- Peak hour speed changes by 20 km/h or more.

10.4.13 The Traffic and Transport Chapter assesses the predicted traffic generation arising from the Dublin Array operational phase. As set out in this chapter, during the operational phase, the OES will result in a negligible amount of additional traffic. The OSS is expected to have up to eight visits per month and the TJB and joint bays along the onshore ECR, only one visit per year.

10.4.14 The O&M Base is predicted to generate additional traffic associated with the staff movements once the site is fully operational, with the additional movements expected to continue after the construction stage is completed. The assessment predicts that there will be a maximum of 80 workers at the O&M Base at any one time. The operational stage staff movements are predicted to be a worst case 245 two-way movements per day. HGV movements associated with the O&M Base will be negligible. No increase in daily average speed changes or peak hour speed changes are predicted.

10.4.15 Therefore, the operational phase does not meet any of the screening criteria and a detailed air quality assessment of traffic emissions is not required.

Other construction plant

10.4.16 During the construction phase, diesel generators will be required at Temporary Construction Compounds (TCCs), the Onshore Substation (OSS), including the trenchless crossing locations along the export cable corridor in the event that mains electric power is unavailable. These generators fall under the category of Non-Road Mobile Machinery (NRMM), which is subject to EU emission standards under Regulation (EU) 2016/1628 to limit pollutants such as NO_x, PM_{10}, and $PM_{2.5}$.

10.4.17 While emissions from NRMM have the potential to affect local air quality, any emissions associated with the temporary use of diesel generators will be localised and short-term. Given the dispersed nature of the works and the limited operational periods of the generators, significant air quality impacts are not anticipated.

10.4.18 The appointed contractor will be responsible for ensuring compliance with all relevant legislation and best practice measures in relation to NRMM, including the selection and operation of equipment that meets the required emission standards. Where feasible, opportunities to minimise emissions, such as optimising generator efficiency, reducing idling times, and implementing site management practices, will be considered as part of the contractor's environmental management approach.

Study area

10.4.19 The Institute of Air Quality Management (IAQM) 'Guidance on the assessment of dust from demolition and construction' indicates that a dust assessment is generally necessary when there is:

- A 'human receptor' such as residential properties, hospitals, schools and residential care homes, within: 350 m of the site boundary; or 50 m of the routes used by construction vehicles on public roads, up to 500 m from the site entrance(s). An 'ecological receptor' such as vegetation or aquatic ecosystems, is within: 50 m of the site boundary; or 50 m of the routes used by construction vehicles on public roads, up to 500 m from the site entrance(s).

10.4.20 To ensure a thorough assessment, the Air Quality study area is set at 500 m from the OES and the O&M Base and 50 m from the construction access routes on public roads.

10.4.21 On this basis the following study area has been adopted in the assessment:

- The OES application site boundary with a buffer of 500 m;
- The O&M Base application site boundary with a buffer of 500 m; and
- The construction access routes to the OES and O&M Base study areas, as set out in the Traffic and Transport Chapter together with a buffer of 50 m.

10.4.22 This size of study area is considered to be appropriately sized in order to capture the worst-case impacts arising from the Dublin Array onshore infrastructure.

Sensitivity of receptor criteria

10.4.23 The sensitivity of a receptor is a function of its capacity to accommodate change, and it reflects its ability to recover if affected. Sensitivity is quantified via a consideration of the receptor's context (its adaptability, tolerance and recoverability) and value. Table 5 sets out the criteria used in defining the sensitivity of the identified Air Quality receptors. All definitions of time periods have been defined from the Environmental Protection Agency (EPA) Guidelines (EPA, 2022).

10.4.24 Four defined levels of sensitivity have been determined (High, Medium, Low or Negligible). Where one of the definitions, for a given level is met, then this has been used to determine the sensitivity level assigned to the Receptor. Guidance set out in the Methodology for Defining Sensitivity to Dust and PM_{10} Effects (IAQM Construction Dust Guidance) has been used to inform the different levels of sensitivity.

10.4.25 Where a receptor could reasonably be assigned more than one level of sensitivity, professional judgement has been used to determine which level is applicable.

Table 5 Sensitivity/importance of the environment

Receptor sensitivity	Definition
High	**Adaptability:** The receptor cannot avoid or adapt to an impact. **Tolerance:** The environment has no or a very low capacity to accommodate the proposed form of change. **Recoverability:** The receptor is anticipated to be permanent (i.e. over 60 years) and recovery is not anticipated. **Value:** the receptor is of High importance or supports or contributes towards the designation of an internationally or nationally important feature. Surrounding land where users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property will be diminished by soiling; and the people or property will reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. As per IAQM guidelines indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.
Medium	**Adaptability:** The receptor has a limited capacity to avoid or adapt to an impact. **Tolerance:** The environment has a moderate to low capacity to accommodate the proposed form of change. **Recoverability:** The receptor is anticipated to recover fully within the medium term (i.e. 7 to 15 years) to long term (i.e. 15 to 60 years).

Receptor sensitivity	Definition
	Value: The receptor is of Medium importance or contributes towards the designation of an regionally important feature. Surrounding land where users will expect to enjoy a reasonable level of amenity but will not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. As per IAQM guidelines indicative examples include parks and places of work.
Low	**Adaptability:** The receptor has a reasonable capacity to avoid or adapt to an impact. **Tolerance:** The environment has a high capacity to accommodate the proposed form of change. **Recoverability:** The receptor is anticipated to recover fully within the short-term (i.e. one to seven years). **Value:** The receptor is of Low importance or contributes towards the designation of a locally important feature. Surrounding land where the enjoyment of amenity will not reasonably be expected; or property will not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property will reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.
Negligible	**Adaptability:** The receptor has a high capacity to avoid or adapt to an impact. **Tolerance:** The environment has a high capacity to accommodate the proposed form of change. Specific water quality conditions of the receptor are likely to be able to tolerate change with very little or no impact upon the baseline conditions detectable. **Recoverability:** The receptor is anticipated to recover fully and will be temporary (i.e. lasting less than one year). **Value:** The receptor is of very low importance.

Magnitude of impact criteria

10.4.26 The descriptions of magnitude are specific to the assessment of air quality impacts and are considered against the magnitude descriptions presented in Table 6. Where an impact could reasonably be assigned to more than one magnitude level, professional judgement has been used to determine which level is the most appropriate for the impact. The magnitude has been assigned based on the most appropriate potential consequences of the impact as defined in Table 6. For example, whilst an impact may occur constantly throughout the operational phase it may not be discernible or measurable in practice due to its small scale. Therefore, it is concluded to be of a Negligible magnitude despite the frequency of the impact.

10.4.27 For the purposes of the definitions below in Table 6 and the assessment, near-field has been defined as within the OES and/or the O&M Base application site boundary. Far-field has been defined as extending beyond these limits but within the study area defined earlier in this section.

Table 6 Magnitude of the impact[2]

Magnitude	Definition
High	**Extent:** Impact across the near-field and far-field areas beyond the study area. High magnitude of change as per Table 7 criteria below. **Duration:** The impact is anticipated to be permanent (i.e. over 60 years). **Frequency:** The impact will occur constantly throughout the relevant project phase. **Consequences:** Permanent changes to key characteristics or features of the particular environmental aspect's character or distinctiveness.
Medium	**Extent:** The maximum extent of the impact is restricted to the far-field (i.e. the defined study area). Medium magnitude of change as per Table 7 criteria below. **Duration:** The impact is anticipated to be medium-term (i.e. 7 to 15 years) to long-term (15 to 60 years). **Frequency:** The impact will occur constantly throughout a relevant project phase. **Consequences:** Noticeable change to key characteristics or features of the particular environmental aspect's character or distinctiveness.
Low	**Extent:** The maximum extent of the impact is restricted to the near-field and adjacent far-field areas. Low magnitude of change as per Table 7 criteria below. **Duration:** The impact is anticipated to be temporary (i.e. lasting less than one year) to short-term (i.e. 1 to 7 years). **Frequency:** The impact will occur frequently throughout a relevant project phase.

2 Note, further criteria used to inform these levels of magnitude in the following section relating to Air Quality Assessment criteria

Magnitude	Definition
	Consequences: Barely discernible/ noticeable change to key characteristics or features of the particular environmental aspect's character or distinctiveness.
Negligible	**Extent:** The maximum extent of the impact is restricted to the near-field and immediately adjacent far-field areas. **Duration:** The impact is anticipated to be momentary (seconds to minutes) to brief (lasting less than a day). **Frequency:** The impact will occur once or infrequently throughout a relevant project phase. **Consequences:** No discernible/ barely discernible change to key characteristics or features of the particular environmental aspect's character or distinctiveness.

Determining the extent for dust emissions

10.4.28 A judgement to determine the level of risk of dust emissions arising from the different construction activities has been adopted in the assessment which follows the criteria set out in the IAQM guidelines (IAQM, 2024). This is particularly important for a construction project such as Dublin Array as it involves different types of site activities including demolition works. The level of risk has been incorporated into the judgement to determine the magnitude of impact defined in Table 6.

10.4.29 As presented in these Guidelines, site activities are split into different categories comprising: Demolition; Earthworks; Construction; and Trackout[3]. These activities are specifically highlighted in the Guidelines as they are regarded as being the most significant generators of dust during the construction phase.

Demolition works

- **Large**: Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;
- **Medium**: Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level; and

3 Trackout refers to the process where dirt, mud, and other debris are carried out of the site by vehicles, leading to dust and sediment being deposited on nearby roads and areas

- **Small**: Total building volume Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.

Earthworks

- **Large**: Total site area >110,000 m^2, Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time Formation of bunds >6 m in height;
- **Medium**: Total site area 18,000 m^2 – 110,000 m^2, Moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m - 6 m in height; and
- **Small**: Total site area <18,000 m^2, Soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, Formation of bunds <3 m in height.

Construction

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

Trackout

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

Defining the significance of effect

10.4.30 The significance of effect associated with the impact will be dependent upon the sensitivity of the receptor and the magnitude of the effect. The assessment methodology of the significance of potential effects is presented in Table 7. Effects defined as Significant, Very Significant and Profound are considered Significant in EIA terms (EPA, 2022) for the purposes of this assessment.

Table 7 Significance of potential effects

			Existing Environment - Sensitivity			
			High	**Medium**	**Low**	**Negligible**
Description of Impact - Magnitude	**Adverse impact**	**High**	Profound or Very Significant (significant)	Significant	Moderate*	Imperceptible
		Medium	Significant	Moderate	Slight	Imperceptible
		Low	Moderate	Slight	Slight	Imperceptible
	Neutral impact	**Negligible**	Not significant	Not significant	Not significant	Imperceptible
	Positive impact	**Low**	Moderate	Slight	Slight	Imperceptible
		Medium	Significant	Moderate	Slight	Imperceptible
		High	Profound or Very Significant (significant)	Significant	Moderate	Imperceptible

*Moderate levels of effect have the potential, subject to the assessor's professional judgement, to be significant. Moderate will be considered as significant or not significant in EIA terms, depending on the sensitivity and magnitude of change factors evaluated. These evaluations are explained as part of the assessment, where they occur.

10.5 Receiving environment

10.5.1 Information on relevant air quality pollutants within the study area was collected through a review of existing studies and datasets. The key sources used to inform the baseline characterisation of the study area are summarised below.

- Air Quality Report 2019, EPA;
- Air Quality Report 2020, EPA;
- Air Quality Report 2021, EPA;
- Air Quality Report 2022, EPA; and
- Air Quality Report 2023, EPA.

10.5.2 Data has been obtained from www.epa.ie/publications/monitoring--assessment/air/2/. The assessment utilises available terrestrial air monitoring stations which are monitored by the EPA.

10.5.3 A desktop review together with ground truthing of sensitive receptors was also undertaken to inform the baseline characterisation.

Ambient air quality

10.5.4 The EPA manages the national ambient air quality network and has established four Air Quality Zones for Ireland:

- Zone A: Dublin;
- Zone B: Cork;
- Zone C: Other cities and large towns; and
- Zone D: Rural Ireland.

10.5.5 These zones were designated for the purpose of managing air quality under the Clean Air for Europe Directive in 2011 and were defined in the Air Quality Standards Regulations and amended in 2013 to take account of population Census counts. The study area sits within Zone A, which represents the area of Dublin.

10.5.6 The EPA publishes air quality monitoring reports for monitoring locations within the four zones. Three locations within Zone A have been selected for the purposes of presenting baseline data: Dún Laoghaire; Clonskeagh; and Tallaght as these are the closest monitoring locations to the study area. These stations have been used to characterise the air quality and pollution receiving environment (see Table 8 and Table 9).

Table 8 Background PM_{10} concentrations in Zone A locations ($\mu g/m^3$)

Pollutant	Averaging period	2019	2020	2021	2022	2023
Dún Laoghaire	PM_{10} annual mean limit value ($\mu g/m^3$)	12	12	11	12	12
	PM_{10} daily limit >50 $\mu g/m^3$ per station (days)	2	0	0	1	0
Clonskeagh	PM_{10} annual mean limit value ($\mu g/m^3$)	Not available (N/A)	N/A	11	11	10
	PM_{10} daily limit >50 $\mu g/m^3$ per station (days)	N/A	N/A	0	1	0
Tallaght	PM_{10} annual mean limit value ($\mu g/m^3$)	12	10	10	11	12

Pollutant	Averaging period	2019	2020	2021	2022	2023
	PM_{10} daily limit >50 µg/m^3 per station (days)	3	0	0	1	1

Table 9 Background $PM_{2.5}$ concentrations in Zone A locations (µg/m^3)

Pollutant	Averaging period	2019	2020	2021	2022	2023
Dún Laoghaire	$PM_{2.5}$ annual mean limit value (µg/m^3)	10	8	8	8	7
Clonskeagh	$PM_{2.5}$ annual mean limit value (µg/m^3)	N/A	N/A	6	7	6
Tallaght	$PM_{2.5}$ annual mean limit value (µg/m^3)	N/A	7	7	6	N/A

Sensitive receptors

10.5.7 The following section describes the sensitive receptors which are located within the Air Quality study area. As set out in Section 10.4, sensitive receptors have been defined using the TII guidelines which state that these include 'Residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present'. Given the characteristics of the study area, the definition of 'places where members of the public are likely to be regularly present' has been assumed to include the following:

- General health care facilities;
- General educational facilities and childcare;
- Recreational areas including beaches; and
- Core business areas.

10.5.8 In addition, the definition of sensitive receptors has been extended to include biodiversity receptors, specifically designated sites. These include designated national and local sites within the study area. As set out in Section 10.4, the study area comprises the OES and the O&M Base plus a buffer of 500 m off the site application boundary and 50 m either side of the construction access routes. Where receptors are located within the OES or the O&M Base specifically these are set out in the Project Description chapter.

OES

Residential Housing

10.5.9 The number of households in the study area was estimated using Census 2022 data on private households, focusing on the total number of households in each Small Area[4]. To improve accuracy, the census data was overlaid with the required buffer zones, and the percentage of each area falling within the buffers was calculated. This percentage was then applied to adjust the household numbers, providing a more accurate representation of households in the study area.

10.5.10 In total, there are approximately 5,768 potential residential receptors within the OES study area.

Schools, education and childcare

10.5.11 There are several schools located in the study area comprising:

- St. Columbanus School, located on Loughlinstown Drive, Ballybrack;
- Gaelscoil Phadraig located at Glencarr Lawn, in Ballybrack;
- Ballyowen Meadows Special School is located on Loughlinstown Drive, Ballybrack;
- St Laurence College located on Wyattville Park; and
- Gaelscoil Shliabh Rua: located on Ballyogan Road.

10.5.12 Ballyowen Meadows Special School provides specialist education to pupils with an autistic spectrum disorder who are aged between 4 and 12 years. In addition, the school provides pre-school services to children aged between 3 and 5 years.

10.5.13 There are various small childcare businesses operating in the study area.

Health care

10.5.14 There are a number of health care services in the study area comprising:

- A Health Service Executive (HSE) clinic on Loughlinstown Drive;
- St. Columcille's Hospital;
- A medical centre, including dental clinic in Cherrywood Business Park;
- An HSE clinic located at Leopardstown Valley Shopping Centre (early years); and

4 Small Areas (SAs) are the smallest geographical units used in the Irish Census for statistical reporting.

- Several health care services located around Wyattville Road/Church Road/Ballybrack.

Sports facilities and other community facilities

10.5.15 Receptors within the study area include:

- Shanganagh Community Gardens – community gardens at Shanganagh adjacent to the Landfall Site;
- Loughlinstown Community Rooms – the centre is located on Loughlinstown Drive. The centre seeks to provide quality activities and services that will contribute to the physical, mental, emotional and social well-being of the community;
- Ballybrack FC and Boxing Club – located at Kilbogget Park;
- Community Groups in Ballybrack and Cabinteely – the Coolevin Scout Den and Coolevin/Ballybrack Project centre are both located in Coolevin, Ballybrack;
- The Carrickmines Croquet and Lawn Tennis Club is located on Glenamuck Road, Carrickmines;
- Stepaside Golf Course – the golf course is located to the south west of the OSS site at Carrickmines;
- Cycle infrastructure – a coastal cycle route crosses near the Landfall Site running to the east of the amenity ground. The coastal cycle route crossing the Landfall Site at Shanganagh is a strategic route running through south Dublin and provides an important link in the coastal cycle network; and
- Leopardstown racecourse is immediately north of the Leopardstown TCC. Many important races are held here, with racing takes place all year round.

Public open space and amenity ground

10.5.16 There are several areas of public open space and amenity ground located within the OES application site boundary including the following:

- Killiney and Shanganagh beaches are a popular location for tourists and local recreational users for its scenery, swimming or walking and are located at the Landfall Site;
- Shanganagh Cliffs, playing pitches and playground: an open amenity ground including children's playground. The playground provides climbing frame equipment and an open space basketball court for the public. To the south there is a football pitch used by soccer teams and other sporting groups;

- Ground west of Shanganagh Road – area of informal open space west of Shanganagh Road adjacent to Ballybrack Dolmen; and
- Glencar Park, Ballybrack: An extension of the park runs south of the Onshore ECR and follows the path of the Kill o' the Grange Stream.

10.5.17 Other areas of public open space and amenity ground located within the study area (i.e. OES + 500 m) include:

- Kilboggett Park (including Ashlawn Park): The park is identified as a District Park as it provides for a range of needs for a number of neighbourhoods. The park offers a wide variety of uses and facilities and provides for both active and passive recreation;
- Proposed Greenway and surrounding open space through Cherrywood Strategic Development Zone (SDZ): The Green Way and its associated walkway/cycleways are part of a major public access network which when finished will stretch throughout the SDZ area connecting the new residential areas with existing communities;
- Cycle infrastructure: There is an existing network of cycling routes within the OES study area;
- There are several other areas of amenity ground and open space recreational land, including the Cabinteely Regional Park; and
- Proposed Jamestown Park: There are proposals to develop a new community park for the Ballyogan area following remediation of the former Ballyogan Landfill Facility immediately adjacent to the site of OSS. The development of Jamestown Park has not yet commenced.

Places of worship

10.5.18 Two places of worship are located within the study area located at Church of Saint Columbanus and Tullow Church.

District centres and core business areas frequented by the public

10.5.19 Numerous receptors are present within the study area, primarily concentrated in several neighbourhood clusters. These businesses serve members of the public.

- Loughlinstown Drive: comprising of shops, food & drink and services such as hairdressers. The area also includes a leisure centre.
- Wyattville Road/Shanganagh Road/Military Road: A similar composition to Loughlinstown Drive, however without the leisure centre but including a funeral home.

- Cherrywood Business Centre: A neighbourhood centre forming part of the Cherrwood SDZ serving residential properties and offices. Businesses comprise shops, food & drink, childcare facilities, a gym and several offices some of which house multinational brands.
- The Park, Carrickmines: a busy regional shopping and office area, with wide range of major retail brands and offices;
- GoQuest: GoQuest is an indoor adventure and challenge arena located in Carrickmines, adjacent to the Ballyogan Business Park;
- Ballyogan Business Park: district centre business park with a range of businesses;
- The Samuel Beckett Civic Campus is a multi-purpose public complex located along Ballyogan Road. The campus spans 18 acres and includes a variety of facilities such as a library and community building, multi-purpose sports building (featuring a sports hall, swimming pool, dance studios, and gym) and outdoor grass and synthetic sports pitches, a skate area, children's playground, and recreational pathways; and
- Ballyogan Community Centre and Family Resource Centre are both located on Ballyogan Road. The campus of buildings also a number of other community uses including a Barnardos family support centre, a childcare provider, a gym and the office of the community development group.

10.5.20 In addition to the above clusters of businesses there are numerous single businesses located inside the study area.

10.5.21 The Onshore ECR will cross the European Foundation for the Improvement of Living (Eurofound). This is a European Union (EU) Agency endeavouring to improve living and working conditions of EU citizens. The tripartite EU agency provides knowledge to assist in the development of better social, employment and work-related policies. The centre is located on Cherrywood, south of Loughlinstown Drive.

O&M Base

10.5.22 As per the OES, the number of households in the study area was estimated using Census 2022 data on private households. In total, there are approximately 955 potential residential receptors within the study area.

10.5.23 The study areas have been informed by best practice. This can be separated as follows:

- Within 500 m of the OES there are 5,768 residential properties;
- Within 500 m of the O&M Base there are 955 residential properties; and

- Within 50 m of the construction access routes there are 1,266 properties.[5]

10.5.24 Dún Laoghaire town centre lies within the 500 m buffer around the O&M Base. The centre comprises a diverse mix of residential, commercial, educational and leisure uses together with public buildings. The Dún Laoghaire harbour area also lies within the study area.

Biodiversity

10.5.25 There are no internationally designated sites for biodiversity in the Air Quality study area.

Nationally designated sites of nature conservation

10.5.26 Nationally designated sites included Natural Heritage Areas (NHA) or proposed NHAs (pNHA).

OES

10.5.27 Table 10 details the NHAs and pNHAs within 15 km of the OES (measured to the closest point of the OES).

Table 10 Nationally designated sites within the Air Quality study area – OES

Site name	Site code	Distance to closest point of the OES (km)
Dalkey Coastal Zone and Killiney Hill pNHA	001206	10 m
Loughlinstown Woods pNHA	001211	5 m

O&M Base

10.5.28 The following nationally designated sites are located within the Air Quality study area at the O&M Base (Table 11):

Table 11 Nationally designated sites within the Air Quality study area – O&M Base

Site name	Site code	Distance to O&M Base (km)
Dalkey Coastal Zone and Killiney Hill pNHA	001206	440 m

[5] Data derived from Census 2022. Details comprise private households.

Locally Important Biodiversity Sites

10.5.29 Locally Important Biodiversity Sites (LIBS), are areas that are outside of protected areas, but which form an integral part of the ecological network across a county and are considered important at a local level and provide a range of ecosystem services to communities. They have no formal designation but are considered sites worthy of protection and enhancement (refer to the Biodiversity chapter for full description).

10.5.30 The following LIBS are located within the air quality study area (Table 12).

Table 12 LIBS within the Air Quality study area - OES

LIBS name	Distance to OES study area (km)
Shanganagh River and Cliff	Within OES
Bride's Glen East	160 m
Heronford Bridge	190 m
Druid's Glen	360 m

10.5.31 There are no LIBS within the Air Quality study area at the O&M Base. These designated sites together with the habitats present in the study area are described in Chapter 2: Biodiversity (Onshore Infrastructure).

10.6 Uncertainties and technical difficulties encountered

10.6.1 There were no technical difficulties encountered for this assessment.

10.7 Scope of the assessment

Scoped in

10.7.1 The following impacts will be assessed:

- Construction:
  - Impact 1: Fugitive dust generation from construction activities associated with the onshore infrastructure.

Scoped out from further evaluation in this EIAR

10.7.2 Based on the baseline environment and the project description outlined in the Project Description chapter, several impacts are proposed to be scoped out of the air quality assessment. These impacts are outlined, together with a justification for a scoping out decision, in Table 13.

Table 13 Impacts scoped out from the assessment

Impacts scoped out	Justification
Construction phase vehicle emissions	As set out in section 10.4, the Dublin Array onshore infrastructure construction phase does not meet the screening criteria set out in Air Quality Assessment of Proposed National Roads – Standard (TII, 2022) for an assessment of air quality effects arising from construction phase vehicle emissions. The following conclusions are pertinent: ▪ Total daily traffic: The predicted increase in total daily traffic on the affected links is significantly below the threshold of 1,000 vehicles per day. ▪ HGV traffic: The largest increase in HGV flows is 69 HGVs per day on several links, which is well below the threshold of 200 HGVs per day. ▪ Road alignment and speed changes: There are no significant changes in road alignment or speed that would meet the criteria for a detailed assessment.
Other Construction Plant	Emissions from diesel generators will be temporary, localised, and limited to instances where mains power is unavailable; therefore, they are not expected to result in significant air quality impacts.
Operational phase vehicle emissions	As set out in Section 10.4 the Dublin Array onshore infrastructure operational phase does not meet the screening criteria set out in Air Quality Assessment of Proposed National Roads – Standard' (TII, 2022) for an assessment of air quality effects arising from operational phase vehicle emissions. The following conclusions are pertinent: The Traffic and Transport Chapter assesses the predicted traffic generation arising from the Dublin Array operational phase. As set out in this chapter, during the operational phase, the OES will result in a negligible amount of additional traffic. The OSS is expected to have six to eight visits per month and the TJB and joint bays along the onshore ECR, only one visit per year. The O&M Base is predicted to generate additional traffic associated with the staff movements once the site is fully operational, with the additional movements expected to continue after the construction stage is completed. The assessment predicts that there would be a maximum of 80 workers at the O&M Base at any one time. The operational stage staff movements are predicted to be 245 two-way movements per day, however as noted in the Traffic and Transport Chapter this would be a worst case as it is expected that a a lot of staff would car share or catch public transport. The assessment has modelled this worst case scenario to demonstrate capacity on the local road network. HGV movements associated with the O&M Base would

Impacts scoped out	Justification
	be negligible. No increase in daily average speed changes or peak hour speed changes are predicted. Therefore, the operational phase does not meet any of the screening criteria and a detailed air quality assessment of traffic emissions is not required.
Emissions from offshore construction phase shipping traffic	The number of vessels that will be required during the construction phase will be minimal in comparison to shipping in the area. In addition, shipping emissions are regulated under the International Convention for the Prevention of Pollution from Ships and the offshore nature of this activity mean it will not be near any human receptors. Furthermore, sensitive marine ecological receptors are not considered to be sensitive to air emissions. Thus, the potential air quality impact from marine traffic emissions will be insignificant and scoped out from the assessment.
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.

10.8 Key parameters for assessment

10.8.1 For each of the impacts 'Scoped-in' to the assessment and as described in the preceding section, the relevant design parameter used in assessing the impact are set out in Table 14. For the purpose of environmental assessment, the design parameters that could give rise to the maximum potential adverse impacts, in respect of receptors, have been chosen as the design parameter to assess impact against.

Table 14 Key parameters used in the assessment

Potential impact	Key parameters used in the assessment	Justification
Construction and decommissioning		
Impact 1: Fugitive dust[6]	As set out in Section 10.4 the following activities have the potential to generate dust emissions: ▪ Demolition works at the site of the O&M Base; ▪ Earthworks including topsoil stockpiling (site preparation works, new roads construction); ▪ Construction operations and associated demobilisation; and ▪ Traffic including by HGVs over paved/unpaved surfaces. These have the potential to occur at the following locations during the construction phase: **OES:** ▪ The proposed TCC locations at the Landfall Site, Clifton Park and Leopardstown; ▪ Along the onshore ECR including at trenchless crossings; and ▪ The site of the proposed OSS at Ballyogan. Dust emissions have the potential to arise due to earthworks, construction works and trackout caused by construction vehicles accessing/egressing these sites. **The O&M Base:** ▪ The site of the proposed O&M Base. Dust emissions have the potential to arise at this location due to demolition, earthworks, construction and trackout caused by construction vehicles accessing/egressing this site.	Activities within the site application boundary that have the potential to result in dust.

6 Fugitive emissions are those which are not collected and released under controlled physical conditions from a definable source, e.g. a stack. On a construction site, dust emissions can occur as a result of different many site activities and are therefore typically fugitive

Potential impact	Key parameters used in the assessment	Justification
	A detailed description of potential sources of dust at each of these is set out in Section 10.10.	

10.9 Project design features and other avoidance and preventative measures.

10.9.1 As outlined within the EIA Methodology Chapter (Volume 2, Chapter 3) and in accordance with the EPA Guidelines (2022), this EIAR describes the following:

- Project Design Features: These are features of the Dublin Array project that were selected as part of the iterative design process, which are demonstrated to avoid and prevent significant adverse effects on the environment in relation to air quality. These are presented within Table 15.
- Other Avoidance and Preventative Measures: These are measures that were identified throughout the early development phase of the Dublin Array project, also to avoid and prevent likely significant effects, which go beyond design features. These measures were incorporated in as constituent elements of the project, they are referenced in the project description chapter of this EIAR, and they form part of the project for which development consent is being sought. These measures are distinct from design features and are found within our suite of management plans. These are also presented within Table 15.
- Additional Mitigation: These are measures that were introduced to the Dublin Array project after a likely significant effect was identified during the EIA assessment process. These measures either mitigate against the identified significant adverse effect or reduce the significance of the residual effect on the environment. The assessment of impacts is presented in sections 10.10 to 10.13 of this EIAR chapter.

10.9.2 All measures are secured within Volume 8, Schedule of Commitments. Where additional mitigation is identified as being required to reduce the significance of any residual effect in EIA terms, this is presented in sections 10.10 to 10.13.

Table 15 Project design features and other avoidance and preventative measures relating to air quality

Project design feature/other avoidance and preventative measures	Where secured
Project Design Features	
Where possible, the OES and O&M Base has been designed to avoid sensitive receptors.	Project Description chapter.
Other Avoidance and Preventative Measures	
Construction phase	

A planning stage CEMP has been included with the application for development consent and is included in Volume 7, Appendix 8. The purpose of the planning stage CEMP is to set out the measures which will be taken to manage the potential environmental impacts of the onshore construction of Dublin Array and limit the disturbance from onshore construction activities such as site preparation, material delivery and removal, works activities and site reinstatement as far as is reasonably practicable. The CEMP is an outline document that, by reference to the assessments reported in the EIAR, sets out the key elements that will be secured in the Final CEMP which the Applicant will be required to submit to Planning Authority for approval, as relevant planning authority, under a requirement of the consent.
 	
▪ In order to reduce the risk of localised erosion (and potential dust emissions) during the excavation and infilling, the area of bare or exposed soils and rock will be kept to a minimum, insofar as practicable, by progressive restoration of final and backfilled surfaces. Where required, stockpiled soils (pending re-use) or exposed surfaces (pending further backfilling to final ground level) will be temporarily covered.
▪ All activities will be undertaken in accordance with the provisions in the Waste Management Act 1996 (as amended).
▪ The CEMP details measures for dust suppression, which will minimise the main adverse effects caused during the construction phase. Such measures will include the following:
  ▪ During hot, dry weather dust suppression will be used to control dust arising from the access track;
  ▪ If necessary, wheel cleansing of vehicles leaving the site will be carried out; and
	Volume 7, Appendix 8: Construction Environmental Management Plan

Project design feature/other avoidance and preventative measures	Where secured
▪ Where required road sweeping of the site roads, entrances and adjacent highway roads will be undertaken.	

10.10 Environmental assessment: Construction phase

Impact 1: Fugitive dust generation from construction activities associated with the onshore infrastructure

10.10.1 As set out in Section 10.4 the following activities have the potential to generate dust emissions:

- Earthworks including topsoil stockpiling (site preparation works, new roads construction);
- Construction operations and associated demobilisation;
- Trafficking including by HGVs over paved/unpaved surfaces; and
- Demolition works.

10.10.2 These have the potential to occur at the following locations during the construction phase:

- OES:
  - The proposed TCC locations at the Landfall Site, Clifton Park and Leopardstown.
  - Along the onshore ECR including trenchless crossings; and
  - The site of the proposed OSS at Ballyogan.

10.10.3 Dust emissions have the potential to arise due to earthworks, construction works and trackout caused by construction vehicles accessing/egressing these sites.

- The O&M Base:
  - The site of the proposed O&M Base.

10.10.4 Dust emissions have the potential to arise at this location due to demolition, earthworks, construction and trackout caused by construction vehicles accessing/egressing this site.

10.10.5 A detailed description of potential sources of dust at each of these locations is included in the assessment below.

Onshore Electrical System

Landfall Site TCC

10.10.6 A TCC of approximately 9,500 m² will be required to support construction of the onshore ECR, the offshore export cables and the Transition Joint Bays (TJBs). Topsoil and subsoil excavated during preparation will be stored separately in line with environmental best practice, ensuring they can be reinstated appropriately after construction. Minor earthworks will be necessary to ensure the TCC is on level ground. The TCC will include a 4 m wide temporary access road with four 3 m wide passing bays.

10.10.7 The sources of potential dust emissions at the Landfall Site TCC will be:

- Site enabling works: dust arising from earthworks during site clearance and soil stripping; construction of the new access track from the public road to the Landfall Site TCC; and the temporary storage of excavated materials including topsoil stripping and placement on site;
- Trenchless crossing activities of the offshore export cable ducts, including drilling;
- Onshore cable duct (TX-01 crossing of the Dublin/Wexford railway line) trenchless crossing activities (note this is an exit pit only at this location);
- TJB construction;
- Onshore ECR installation;
- The movement of construction vehicles, loading and unloading of aggregates/materials/movement of material around the site (expected to last for the full duration of the construction phase at the Landfall Site);
- Reinstatement of the Landfall Site TCC; and
- Dust caused by trackout associated with the above.

10.10.8 An overview of the sources and processes associated with the preparatory site works and the construction/infrastructure installation activities, and their respective potential for dust deposition (both dust and smaller particles), is presented below in Table 16.

Table 16 Site activities: Sources of dust emissions – Landfall Site TCC

Activity	Source	Emission potential	Comments
Construction activities at Landfall Site TCC	Earthworks including soil stripping and stockpiling (site preparation works, new roads construction);	High – dry or fine materials during strong windy weather	Temporary, variable from day to day depending on prevailing

Activity	Source	Emission potential	Comments
	Construction operations including drilling and associated demobilisation; and Trafficking, including by HGVs over paved/unpaved surfaces.	Low – coarse or wet materials during conditions of low wind speed	meteorological conditions, level, and location of activity. Soils immediately used to construct berms, used in restoration works or placed in stockpiles.

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Table 17 Impact 1: Determination of magnitude for dust emissions – Landfall Site TCC

	Justification
Extent – Negligible (magnitude)	Site is considered to be part of 'Large' construction site as per IAQM guidance as it is part of the wider OES construction works. The construction phase works set out above which have a potential to generate dust and this will occur immediately within close proximity of sensitive receptors. However, by adopting the avoidance and preventative measures set out in section 10.9, the extent of emissions are expected to be Negligible as they would be restricted to within the boundary of the TCC site only.
Duration – Negligible	Works which may generate dust will be temporary in nature. If left unmitigated there would be a risk of prolonged impact on nearby sensitive receptors. By adopting the avoidance and preventative measures set out in section 10.9, it is anticipated that the impact can be kept to a momentary duration or avoided completely.
Frequency – Negligible	By adopting the avoidance and preventative measures set out in Section 10.9, it is considered that the impact will occur infrequently throughout the construction phase.
Probability – Negligible	By adopting the avoidance and preventative measures set out in section 10.9, the probability of emissions are expected to be Negligible.
Consequence – Negligible	Adopting the avoidance and preventative measures set out in section 10.9, there is expected to be no discernible change to key

	Justification
	characteristics or features of nearby sensitive receptors. The consequences would be negligible.
Overall magnitude	The potential magnitude on land use is rated as being **Negligible**.

Table 18 Impact 1: Determination of the level of sensitivity of the receptors – Landfall Site TCC

	Justification
Adaptability – High (sensitivity)	The receptors within the study area have a limited capacity to avoid or adapt to an impact. Residential properties within 10 m and locally important community facilities (playing fields) immediately adjacent to where the construction works will take place. Dalkey Coastal Zone and Killiney Hill pNHA is within 10 m of the TCC.
Tolerance – Medium	The environment has a moderate to low capacity to accommodate the proposed form of change.
Recoverability – Low	The receptor is anticipated to recover fully within the short-term (i.e. one to seven years).
Value – Medium	Surrounding land where users would expect to enjoy a reasonable level of amenity
Overall sensitivity	The sensitivity is considered to be **High**.

10.10.9 The magnitude of the impact has been assessed as **Negligible**, with the maximum sensitivity of the receptors being **High**. Therefore, the significance of effect is **Not significant in EIA terms**.

Clifton Park TCC

10.10.10 As set out in the Project Description chapter a TCC of approximately 4,000 m² will be required throughout the onshore ECR construction works. Traffic movements in and out of the TCC will continue for the full duration of the construction phase for the Onshore ECR.

10.10.11 Minor earthworks will be necessary to ensure the TCC is on level ground. Topsoil and subsoil excavated during preparation will be stored separately in line with best practice, ensuring they can be reinstated appropriately after construction.

10.10.12 The sources of potential dust emissions during the construction and use of the proposed TCC at Clifton Park will be:

- Site enabling works – dust arising from earthworks during site clearance and soil stripping; and the temporary storage of excavated materials including topsoil stripping and placement on site at the TCC;
- Drilling activity – TX-01 trenchless crossing under the Dublin/Wexford railway line; and
- Drilling activity – TX-02 trenchless crossing under the Shanganagh River.

- The movement of construction vehicles, loading and unloading of aggregates/materials/movement of material around the site;
- Reinstatement of the TCC; and
- Dust caused by trackout associated with the above.

10.10.13 An overview of the sources and processes associated with the preparatory site works and construction/infrastructure installation activities at the Clifton Park TCC and the respective potential for dust deposition (both dust and smaller particles), is presented in Table 19.

Table 19 Site activities: Sources of dust emissions – Clifton Park

Activity	Source	Emission potential	Comments
Construction activities at Clifton Park TCC	Earthworks including soil stripping and stockpiling (site preparation works); Construction operations including drilling and associated demobilisation; and Trafficking including by HGVs over paved/unpaved surfaces.	High - dry or fine materials during strong windy weather	Temporary, variable from day to day depending on prevailing meteorological conditions, level, and location of activity. Soils immediately used to construct berms, used in restoration works or placed in stockpiles.
		Low – coarse or wet materials during conditions of low wind speed	

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Table 20 Impact 1: Determination of magnitude for dust emissions – Clifton Park TCC

	Justification
Extent – Negligible (magnitude)	Site is considered to be part of 'Large' construction site as per IAQM guidance as it is part of the wider OES construction works. The construction phase works set out above which have a potential to generate dust and this will occur immediately within close proximity of sensitive receptors. However, by adopting the avoidance and preventative measures set out in section 10.9, the extent of emissions are expected to be Negligible as they would be restricted to within the site boundaries only.
Duration – Negligible	Works which may generate dust will be temporary in nature. If left unmitigated there would be a risk of prolonged impact on nearby sensitive receptors.
Frequency – Negligible	By adopting the avoidance and preventative measures set out in section 10.9, it is considered that the impact will occur infrequently throughout the construction phase.
Probability – Negligible	By adopting the avoidance and preventative measures set out in section 10.9, the probability of emissions are expected to be Negligible.
Consequence – Negligible	Adopting the avoidance and preventative measures set out in section 10.9, there is expected to be no discernible change to key characteristics or features of nearby sensitive receptors. The consequences would be negligible.
Overall magnitude	The potential magnitude on land use is rated as being **Negligible**.

Table 21 Impact 1: Determination of the level of sensitivity of the receptors – Clifton Park TCC

	Justification
Adaptability – Medium (sensitivity)	The receptors within the study area have a limited capacity to avoid or adapt to an impact. Residential properties less than 10 metres away on the south side of Clifton Park. Shanganagh River and Cliff are Locally Important Biodiversity Site (LIBS) within 5 m.
Tolerance – Medium	The environment has a moderate to low capacity to accommodate the proposed form of change.
Recoverability – Low	The receptor is anticipated to recover fully within the short-term (i.e. one to seven years).

	Justification
Value – Medium	Surrounding land where users would expect to enjoy a reasonable level of amenity
Overall sensitivity	The sensitivity is considered to be **Medium**

10.10.14 The magnitude of the impact has been assessed as **Negligible**, with the maximum sensitivity of the receptors being **Medium**. Therefore, the significance of effect is **Not significant**.

Leopardstown TCC

10.10.15 A TCC of approximately 14,000 m² will be required throughout the onshore ECR construction works at this location. The TCC will house plant and equipment it will be used to store materials such as cable drums, topsoil, and will provide welfare facilities and office cabins for the onshore export cable route (ECR). Minor earthworks will be necessary to ensure the TCC is on level and stable terrain during site enabling works.

10.10.16 Topsoil and subsoil excavated during preparation will be stored separately in line with best practice, ensuring they can be reinstated appropriately after construction.

10.10.17 The sources of potential dust emissions during the construction phase activities at the Leopardstown TCC will be:

- Site enabling works: dust arising from earthworks during site clearance; upgrades to the existing entrance from the public road; and the temporary storage of excavated materials including topsoil stripping and placement on site at the TCC;
- The movement of construction vehicles, loading and unloading of aggregates/materials/movement of material around the site (expected to last for the full duration of the construction phase);
- Reinstatement of the TCC; and
- Dust caused by trackout associated with the above.

10.10.18 An overview of the sources and processes associated with the preparatory site works and the construction/infrastructure installation activities, and their respective potential for dust deposition (both dust and smaller particles), is presented in Table 22.

Table 22 Site activities: Sources of dust emissions – Leopardstown TCC

Activity	Source	Emission potential	Comments
Construction activities at TCC Leopardstown	Earthworks (site preparation works, new roads construction); Associated demobilisation; and Trafficking including by HGVs over paved/unpaved surfaces.	High – dry or fine materials during strong windy weather	Temporary, variable from day to day depending on prevailing meteorological conditions, level, and location of activity. Soils immediately used to construct berms, used in restoration works or placed in stockpiles.
		Low – coarse or wet materials during conditions of low wind speed	

Assessment

Table 23 Impact 1: Determination of magnitude for dust emissions – Leopardstown TCC

	Justification
Extent – Negligible (magnitude)	Site is considered to be part of 'Large' construction site as per IAQM guidance as it is part of the wider OES construction works. The construction phase works set out above which have a potential to generate dust and this will occur immediately within close proximity of sensitive receptors. However, by adopting the avoidance and preventative measures set out in section 10.9, the extent of emissions are expected to be Negligible as they would be restricted to within the site boundaries only.
Duration – Negligible	Works which may generate dust will be temporary in nature. If left unmitigated there would be a risk of prolonged impact on nearby sensitive receptors.
Frequency - Negligible	By adopting the avoidance and preventative measures set out in section 10.9, it is considered that the impact will occur infrequently throughout the construction phase.
Probability – Negligible	By adopting the avoidance and preventative measures set out in section 10.9, the probability of emissions are expected to be Negligible.

	Justification
Consequence - Negligible	Adopting the avoidance and preventative measures set out in section 10.9, there is expected to be no discernible change to key characteristics or features of nearby sensitive receptors. The consequences would be negligible.
Overall magnitude	The potential magnitude on land use is rated as being **Negligible**.

Table 24 Impact 1: Determination of the level of sensitivity of the receptors – Leopardstown TCC

	Justification
Adaptability – Medium (sensitivity)	The receptors within the study area have a limited capacity to avoid or adapt to an impact. Residential properties within 20 m of the TCC.
Tolerance – Medium	The environment has a moderate to low capacity to accommodate the proposed form of change.
Recoverability – Low	The receptor is anticipated to recover fully within the short-term (i.e. one to seven years).
Value – Medium	Surrounding land where users would expect to enjoy a reasonable level of amenity.
Overall sensitivity	The sensitivity is considered to be **Medium**.

10.10.19 The magnitude of the impact has been assessed as **Negligible**, with the maximum sensitivity of the receptors being **Medium**. Therefore, the significance of effect is **Not significant**.

Onshore ECR

10.10.20 The sources of potential dust emissions during the Onshore ECR construction phase activities will be:

- The movement of construction vehicles, loading and unloading of aggregates/materials/movement along the onshore ECR. These activities will either be to support the installation of the trenchless crossings or the sections of open-cut trench along the onshore ECR;
- Excavation and construction of open trench sections including joint bays – see details below;
- Setting out of trenchless crossings including excavation and construction – see details below;
- Reinstatement of these sections of the Onshore ECR; and
- Trackout associated with these activities.

Trenchless crossings

10.10.21 As set out in the Project Description chapter, trenchless crossing techniques will involve drilling under certain significant watercourse and transport networks to avoid disruption by standard open-cut trenching. Limited surface excavation works will be required to create the drill entry and exit pits in the temporary trenchless crossing compounds. Dust may be generated through drill arisings if left to dry and become exposed.

10.10.22 Trenchless crossings will be located at eight locations along the Onshore ECR as set out in Table 25.

Table 25 Trenchless crossings along the onshore ECR

Reference no.	Obstacle	Location	Sector no.
TX-01 (referred to above as located at the Clifton Park TCC)	Railway Line	Shanganagh Cliffs – Clifton Park	1
TX-02 (referred to above as located at the Clifton Park TCC)	Shanganagh River	Clifton Park – Bayview Glen	1
TX-03	Shanganagh Road – Killiney Hill Road Roundabout (R119)	Bayview Glade - Shanganagh Road	1
TX-04	Kill o' the Grange Stream	Achill Road - Loughlinstown Linear Park	1 & 2
TX-05	Kill o' the Grange Stream	Loughlinstown Linear Park	2
TX-06	N11, Loughlinstown River	Eurofound – Cherrywood Park	2 & 3
TX-07	M50	Carrickmines Great	4
TX-08	Glenamuck District Distributor Road, Golf Stream	Carrickmines Great	6 & 7

Open cut trench installation

10.10.23 The onshore ECR will be installed on a rolling basis. Where no obstacles or constraints exist within or near the ECR, it is expected that progress rates for the trench excavation and installation of ducts for the two circuits will be:

- 20 m linear per day duct install within roads; and
- 40 m linear per day duct install within open greenspace;

10.10.24 All road surfaces will be reinstated to TII specification. An overview of the sources and processes associated with the preparatory site works and the construction/infrastructure installation activities, and their respective potential for dust deposition (both dust and smaller particles), is presented below in Table 26.

Table 26 Onshore ECR: Sources of dust emissions

Activity	Source	Emission potential	Comments
Onshore ECR	Excavation (of sections of open-cut trench ECR and entry/exit pits for trenchless crossings). Installation to occur on a rolling basis; Construction operations at joint bays and associated demobilisation; and Trafficking to and from these locations.	High – dry or fine materials during strong windy weather	Temporary, variable from day to day depending on prevailing meteorological conditions, level, and location of activity. Soils immediately used to construct berms, used in restoration works or placed in stockpiles.
		Low – coarse or wet materials during conditions of low wind speed	

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Table 27 Impact 1: Determination of magnitude for dust emissions – onshore ECR*

*(excluding the three main TCCs which have been considered above – see Table 17, Table 20 and Table 23)

	Justification
Extent – Negligible	Site is considered to be part of 'Large' construction site as per IAQM guidance as it is part of the wider OES construction works. The construction phase works set out above which have a potential to generate dust, and this will occur immediately within close proximity of sensitive receptors. However, by adopting the avoidance and preventative measures set out in section 10.9, the extent of emissions are expected to be Negligible as they would be restricted to within the site boundaries only.
Duration – Negligible	Works which may generate dust will be temporary in nature. If left unmitigated there would be a risk of prolonged impact on nearby sensitive receptors.
Frequency - Negligible	By adopting the avoidance and preventative measures set out in section 10.9, it is considered that the impact will occur infrequently throughout the construction phase.

	Justification
Probability – Negligible	By adopting the avoidance and preventative measures set out in section 10.9, the probability of emissions are expected to be Negligible.
Consequence - Negligible	Adopting the avoidance and preventative measures set out in section 10.9, there is expected to be no discernible change to key characteristics or features of nearby sensitive receptors. The consequences would be negligible.
Overall magnitude	The potential magnitude on land use is rated as being Negligible.

Table 28 Impact 1: Determination of the level of sensitivity of the receptors – onshore ECR*

* excluding the TCCs

	Justification
Adaptability – High (sensitivity)	The receptors within the study area have a limited capacity to avoid or adapt to an impact. High proportion of residential properties within 5 m and numerous community facilities immediately adjacent to where the works will take place. Ecological receptors comprising designations of national importance (Loughlinstown Woods pNHA).
Tolerance – Medium	The environment has a moderate to low capacity to accommodate the proposed form of change.
Recoverability – Low	The receptor is anticipated to recover fully within the short-term (i.e. one to seven years).
Value – Medium	Surrounding land where users would expect to enjoy a reasonable level of amenity.
Overall sensitivity	The sensitivity is considered to be **High**.

10.10.25 The magnitude of the impact has been assessed as **Negligible**, with the maximum sensitivity of the receptors being **High**. Therefore, the significance of effect is **Not significant**.

OSS and grid connection

10.10.26 The proposed OSS and associated grid connection route to the existing Carrickmines 220kV substation will be situated within a 2-hectare (ha) site, with 1.7 ha dedicated to the OSS itself and the remaining area used for enabling works, temporary storage, and laydown areas during construction.

10.10.27 The sources of potential dust emissions during the construction of the OSS and the grid connection to the existing Carrickmines substation will be:

- Site set up: dust arising from earthworks during site clearance and soil stripping; construction of the new access; and the temporary storage of excavated materials including topsoil stripping and placement on site;
- Civil works including earthworks, drainage, foundations, fencing, bunds and road works;
- OSS construction;
- The movement of construction vehicles, loading and unloading of aggregates/materials/movement of material around the site (expected to last for the full duration of the construction phase); and
- Trackout associated with these activities.

10.10.28 An overview of the sources and processes associated with the preparatory site works and the construction/infrastructure installation activities, and their respective potential for dust deposition (both dust and smaller particles), is presented below in Table 29.

Table 29 Site activities: Sources of dust emissions

Activity	Source	Emission potential	Comments
OSS Construction activities	Earthworks (site preparation works, new roads construction); Construction operations including civils and associated demobilisation; and Trafficking including by HGVs over paved/unpaved surfaces.	High - dry or fine materials during strong windy weather	Temporary, variable from day to day depending on prevailing meteorological conditions, level, and location of activity. Soils immediately used to construct berms, used in restoration works or placed in stockpiles.
		Low – coarse or wet materials during conditions of low wind speed	

Assessment

Table 30 Impact 1: Determination of magnitude for dust emissions – OSS and grid connection

	Justification
Extent – Negligible	Site is considered to be part of 'Large' construction site as per IAQM guidance as it is part of the wider OES construction works. The construction phase works set out above, which have a potential to generate dust and this will occur immediately within close proximity of sensitive receptors.

	Justification
	However, by adopting the avoidance and preventative measures set out in Section 10.9, the extent of emissions are expected to be Negligible as they would be restricted to within the site boundaries only.
Duration – Negligible	Works which may generate dust will be temporary in nature. If left unmitigated there would be a risk of prolonged impact on nearby sensitive receptors.
Frequency - Negligible	By adopting the avoidance and preventative measures set out in Section 10.9, it is considered that the impact will occur infrequently throughout the construction phase.
Probability – Negligible	By adopting the avoidance and preventative measures set out in Section 10.9, the probability of emissions are expected to be Negligible.
Consequence - Negligible	Adopting the avoidance and preventative measures set out in Section 10.9, there is expected to be no discernible change to key characteristics or features of nearby sensitive receptors. The consequences would be negligible.
Overall magnitude	The potential magnitude on land use is rated as being **Low**.

Table 31 Impact 1: Determination of the level of sensitivity of the receptors

	Justification
Adaptability – Medium (sensitivity)	The receptors within the study area have a limited capacity to avoid or adapt to an impact. Office premises within 10 m to where the works will take place.
Tolerance – Medium	The environment has a moderate to low capacity to accommodate the proposed form of change.
Recoverability – Low	The receptor is anticipated to recover fully within the short-term (i.e. one to seven years).
Value – Medium	Surrounding land where users would expect to enjoy a reasonable level of amenity
Overall sensitivity	The sensitivity is considered to be **Medium**.

10.10.29 The magnitude of the impact has been assessed as **Negligible**, with the maximum sensitivity of the receptors being **Medium**. Therefore, the significance of effect is **Not significant**.

O&M Base

10.10.30 The sources of potential dust emissions during the construction of the O&M Base will be:

- Demolition works;
- Dust arising from civils and earthworks;
- Construction of the O&M Base;
- The movement of construction vehicles, loading and unloading of aggregates/materials/movement of material around the site; and
- Trackout associated with these activities.

10.10.31 An overview of the sources and processes associated with the preparatory site works (including demolition) and the construction/infrastructure installation activities, and their respective potential for dust deposition (both dust and smaller particles), is presented below in Table 32.

Table 32 Site activities: Sources of dust emissions

Activity	Source	Emission potential	Comments
Construction activities at the O&M Base	Demolition of existing port infrastructure to facilitate the construction of the O&M Base; Earthworks and civils to enable site clearance (site preparation works); Construction operations and associated demobilisation; and Trafficking including by HGVs over paved/unpaved surfaces.	High - dry or fine materials during strong windy weather	Temporary, variable from day to day depending on prevailing meteorological conditions, level, and location of activity. Soils immediately used to construct berms, used in restoration works or placed in stockpiles.
		Low – coarse or wet materials during conditions of low wind speed	

Assessment

Table 33 Impact 1: Determination of magnitude for dust emissions – O&M Base

	Justification
Extent – Negligible	Site is considered to be part of 'Small' construction site as per IAQM guidance. The construction phase works (including demolition works) set out above which have a potential to generate dust, and this will occur immediately adjacent to sensitive receptors. However, by adopting the avoidance and preventative measures set out in section 10.9, the extent of emissions are expected to be Negligible as they would be restricted to within the site boundaries only.
Duration – Negligible	Works which may generate dust will be temporary in nature. If left unmitigated there would be a risk of prolonged impact on nearby sensitive receptors.
Frequency - Negligible	By adopting the avoidance and preventative measures set out in Section 10.9, it is considered that the impact will occur infrequently throughout the construction phase.
Probability – Negligible	By adopting the avoidance and preventative measures set out in section 10.9, the probability of emissions are expected to be Negligible.
Consequence - Negligible	Adopting the avoidance and preventative measures set out in Section 10.9, there is expected to be no discernible change to key characteristics or features of nearby sensitive receptors. The consequences would be negligible.
Overall magnitude	The potential magnitude on land use is rated as being **Negligible**.

Table 34 Impact 1: Determination of the level of sensitivity of the receptors

	Justification
Adaptability – Medium (sensitivity)	The receptors within the study area have a limited capacity to avoid or adapt to an impact. Offices within 20 m and community facilities immediately adjacent to where the works will take place.
Tolerance – Medium	The environment has a moderate to low capacity to accommodate the proposed form of change.
Recoverability – Low	The receptor is anticipated to recover fully within the short-term (i.e. one to seven years).
Value – Medium	Surrounding land where users would expect to enjoy a reasonable level of amenity.
Overall sensitivity	The sensitivity is considered to be **Medium**.

10.10.32 The magnitude of the impact has been assessed as **Negligible**, with the maximum sensitivity of the receptors being **Medium**. Therefore, the significance of effect is **Not significant**.

Proposed mitigation

10.10.33 No further mitigation beyond the measures set out in section 10.9 is considered to be necessary.

Residual effect assessment

10.10.34 Effects are considered to be **Not Significant** in respect of fugitive dust generation from construction activities associated with the onshore infrastructure.

10.11 Environmental assessment: Operational phase

10.11.1 As set out in section 10.7, no operational phase impacts were scoped in.

10.12 Environmental assessment: Decommissioning phase

Onshore Electrical System

10.12.1 The construction, operation and maintenance works associated with the OES will be managed by the Applicant until the end of the proving period and handover of ownership to EirGrid. As the enduring asset owner, EirGrid will become responsible for decommissioning of the transferring assets at the end of their deemed lifetime.

10.12.2 Accordingly, the planning application does not seek permission for decommissioning of the OES. However, for the purpose of enabling a comprehensive environmental impact assessment, we have set out below our recommended approach to decommissioning, should EirGrid choose to decommission any aspect of the OES. This approach is informed by the Applicant's experience of decommissioning onshore substations and onshore export cables on other projects and knowledge of how EirGrid typically do this.

10.12.3 In addition, we have set out below the factors which should inform any decision by EirGrid to decommissioning:

- The baseline environment at the time decommissioning works are carried out;
- Technological developments relating to decommissioning of onshore transmission infrastructure;

- Changes in what is accepted as best practice relating to decommissioning of onshore transmission infrastructure;
- Submissions or recommendations made by interested parties, organisations and other bodies concerned with decommissioning of onshore transmission infrastructure; and
- Any new relevant regulatory requirements.

10.12.4 Further, any decommissioning works must:

- Comply with any decommissioning specific conditions in the Development Consent;
- Ensure that the environmental impacts are consistent or less in scale and magnitude to those predicted in the EIAR, Natura Impact Statement and Water Framework Directive Assessment associated with the Development Consent or any amendment of the Development Consent or any subsequent consent EirGrid might be granted in respect of decommissioning; and
- Comply with the relevant health and safety regulations.

10.12.5 A decommissioning plan, along with an environmental management plan, should be prepared before any decommissioning works begin. If necessary, an application for consent should be made by EirGrid, and submitted to the relevant competent authority, in respect of any decommissioning works which require consent. We would expect any such application to involve further environmental assessment and public participation, and for any decision made by the competent authority to be judicially reviewable.

O&M Base

10.12.6 A Decommissioning and Restoration Plan has been included in Volume 7 Appendix 7.2 of the Environmental Impact Assessment Report. As outlined in the Plan, the O&M building will be either re-purposed for an alternative use or demolished following the decommissioning of the offshore infrastructure.

10.12.7 Following the decommissioning of the offshore infrastructure the fencing and pontoon will be removed, and the hardstanding area will be taken over by Dún Laoghaire-Rathdown County Council (DLRCC) for general harbour operations.

10.12.8 Decommissioning activities for the OES and the O&M Base are not anticipated to exceed the construction phase design parameters which have been assessed in Section 10.10. Accordingly, it is anticipated that there would be the same level of impact and resulting level of effect and significance (or less) in comparison to the assessment of construction effects set out in section 10.10 of this chapter.

10.13 Environmental assessment: Cumulative effects

Onshore projects for cumulative assessment

10.13.1 The specific projects scoped into this cumulative impact assessment, and the tiers into which they have been allocated are presented in Table 35. The operational projects included within the table are included due to their completion/commission subsequent to the data collection process for Dublin Array and as such not included within the baseline characterisation.

Table 35 Tier descriptions

Tiers	Development stage
Tier 1	Project under construction. Projects that are only partially constructed at the time that baseline characterisation is undertaken.
	Projects that were only recently completed, during the development of the baseline characterisation. The full extent of the impacts arising from the development(s) may not be reflected in the baseline.
	Plans and projects which have been adopted and/or for which consent for further works and operations has been granted, such as maintenance dredging or notable maintenance works which may arise in additional effects.
Tier 2	Permitted application(s), but not yet implemented.
Tier 3	Submitted application(s), but not yet determined.
	Development objectives and projects identified in an approved plan, but not yet implemented, and emerging development objectives and proposals in draft plans, with appropriate weight given as they move closer to adoption), noting that detailed information on emerging proposals is necessarily limited.
	Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

Effect 1: Potential cumulative air quality effects

Overview

10.13.2 This section outlines the cumulative impact assessment on air quality and takes into account the impacts of the proposed development alone, together with other plans and projects. As outlined in Volume 2, Chapter 2: Cumulative Effects Assessment Methodology chapter, the screening process involved determination of appropriate search areas for projects, plans and activities and Zones of Influence (ZoIs) for potential cumulative effects. These were then screened according to the level of detail publicly available and the potential for interactions with regard to the presence of an impact pathway as well as spatial and temporal overlap.

10.13.3 The CEA long list of projects, plans and activities with which Dublin Array's onshore infrastructure has the potential to interact with to produce a cumulative impact is presented within the Cumulative Effects Assessment Methodology chapter. Each plan and project has been considered on case-by-case basis with the maximum suite of projects identified from a long list within a search area defined as 500 m beyond the site boundary of the onshore infrastructure.

10.13.4 The greatest potential for cumulative effects arises when the construction phase of another development overlaps with the construction phase of the onshore infrastructure, as activities that could be potentially detrimental to the ground conditions and land use environment are greatly reduced during the operational phase of developments. Potential cumulative effects to air quality between the onshore infrastructure and other proposed or consented developments are considered plausible only where the development footprint of both developments overlap, therefore a 500 m search area is more than sufficient to encapsulate relevant developments.

Projects for cumulative assessment

10.13.5 The specific projects scoped into this cumulative impact assessment on land, soils and geology receptors, and the tiers into which they have been allocated are presented in Table 36.

Table 36 Projects for cumulative assessment

Development type	Project name	Current status of development	Data confidence assessment/phase	Planned programme
Tier 1				
District Road Scheme	Glenamuck District Road Scheme.	Consented – construction commenced	High – consented	Construction has started. Construction will have completed by the time construction starts on Dublin Array onshore infrastructure.
Apartment development	482 no. apartments, creche and associated site works, Golf Lane.	Consented – construction commenced	High – consented	Construction has started. Construction will have completed by the time construction starts on Dublin Array onshore infrastructure.
Mixed Use development	A total of 191,115 m^2 (gross floor area – GFA) in 15 blocks including: 1,269 no. residential units (115,332 m^2), Retail Gross (20,284 m^2), High Intensity Employment uses (22,946 m^2), Non-retail uses (31,115 m^2), community uses (1,437 m^2) and associated work, north side of R118.	Consented – construction commenced	High – consented	Construction has started. Construction will have completed by the time construction starts on Dublin Array onshore infrastructure.
Tier 2				
Apartment development	418 Build-to-rent apartment units within Cherrywood SDZ.	Consented	High – consented	Construction not started
Health Care centre	Demolition of all existing buildings (1,985 m^2) on site and the construction of a 4 storey Primary Care Centre and General Practitioner	Consented	High – consented	Construction not started

Development type	Project name	Current status of development	Data confidence assessment/phase	Planned programme
	Surgery with a gross floor area of 4,267 m^2.			
Road Re-alignment and Ancillary Amendments	Beckett Road Re-alignment and Ancillary Amendments.	Consented	High – consented	Construction has not started. It is anticipated that construction will have completed by the time construction starts on Dublin Array onshore infrastructure.
O&M Base				
Leisure development	Leisure development at the former ferry terminal building, Dún Laoghaire Harbour, Dún Laoghaire.	Consented	Consented but construction not started	Post 2024
Tier 3				
Flood relief scheme	The Deansgrange Flood Relief Scheme at Glenavon Park.	Pre-application	High – designs developed	Post 2025
Coastal protection measures	The East Coast Railway Infrastructure Protection Project (ECRIPP).	Pre-application	Low – currently at project concept, feasibility and option selection stage	Post 2027
Electricity infrastructure	Dublin Replacement Underground Cable Programme CP1146 Carrickmines to Poolbeg Cable Replacement.	Pre-application	Medium – route options identified	Post 2026
O&M Base				
National Watersports Campus	National Water sports Campus, Dún Laoghaire.	Pre-application	Medium – concept development	Post 2026

Impact 2: Cumulative effects on air quality

10.13.6 The potential for significant cumulative effects is presented in Table 37 .

Table 37 Determination of potential for cumulative effects on air quality

	Justification
Step 1: Drivers	Changes to the baseline environment arising from the construction and operation of the shortlisted projects in the preceding section could potentially affect air quality receptors.
Step 2: Pressures	Interaction between the shortlisted projects in the preceding section and the Dublin Array onshore infrastructure could potentially have an additive effect on air quality receptors. However, mitigation measures as presented in section 10.9 will be necessary to ensure no significant effects arise cumulatively air quality during the construction phase of these developments. Furthermore, all of these projects will be physically separated from the Dublin Array onshore infrastructure construction areas or are likely to be built on different timelines to Dublin Array. Pollution control measures will be in place for Dublin Array (refer to section 10.9) which will ensure that the risk of pollution impacting air quality receptors will be strictly controlled throughout the duration of the construction phase and once the project is operational.
Step 3: States	The states that may be affected are the air quality receptors within the study area.
Step 4: Impacts	The effects on air quality from the project alone were deemed to be Not Significant. Despite being potentially additive, it is not anticipated that the cumulative changes arising from the developments would be measurable or be significant in EIA terms when considered cumulatively.
Step 5: Responses	No additional mitigation to that already identified in section 10.9 is considered necessary to prevent significant effects.
Conclusion	Despite being potentially additive, it is not anticipated that the cumulative changes arising from the developments would be measurable at the identified receptors or be significant in EIA terms when considered cumulatively. Effects will be **Not Significant** in EIA terms.

10.14 Interactions of the environmental factors

10.14.1 This chapter has considered the effect of Dublin Array onshore infrastructure on air quality. In all cases, subject to the measures set out in section 10.9, the effects identified with this chapter are predicted to be not significant.

10.14.2 Potential inter-related effects could arise in relation to air quality in respect of the following EIAR topics:

- Biodiversity – Volume 5, Chapter 2;
- Land, Soils and Geology – Volume 5, Chapter 3;

- Water (Hydrogeology and Flood Risk) – Volume 5, Chapter 4;
- Traffic and Transport – Volume 5, Chapter 6; and
- Human Health – Volume 5, Chapter 9.

10.14.3 As set out in section 10.7 air quality effects arising from vehicle emissions during both the construction and operational phases was scoped out as the onshore infrastructure falls below the relevant screening thresholds.

Impact 1 – Fugitive dust emissions arising from construction activities potential for interaction with: biodiversity; land, soils and geology; water; and human health

10.14.4 As assessed in section 10.10, the onshore infrastructure construction works could affect the air quality by mobilisation of dust. If left unmitigated these fugitive emissions have the potential to be harmful to biodiversity, water, soils and human health. Avoidance and preventative measures designed to prevent fugitive emissions of dust and protect air quality as presented in section 10.9 will in turn protect biodiversity, water, soils and human health. These same measures are presented in the corresponding EIAR chapters for: Biodiversity; Water; Land, Soils and Geology and Human Health as set out above. As a result of these measures, the assessment for those environmental factors predicts no significant effects to receptors. Therefore, it is not anticipated that any inter-related effects to air quality will be produced that will be greater than the level of significance already identified.

10.15 Transboundary effects

10.15.1 The Dublin Array onshore infrastructure is located wholly within the Republic of Ireland. There are no transboundary effects associated with air quality in relation to the onshore infrastructure.

10.16 Summary of effects

Overall, following an assessment of air quality, during the construction, operational and decommissioning phases of Dublin Array, it is concluded that there will be no significant effects on air quality. The results of this EIAR assessment are summarised in Table 38.

Table 38 Summary of air quality effects

Description of effect	Effect	Mitigation measures	Residual effect
Construction and Decommissioning			
Impact 1: Fugitive dust generation from construction activities associated with the onshore infrastructure	Not significant	No additional measures are required in addition to those listed in section 10.9.	No significant adverse residual effects
Operational			
None			
Cumulative effects			
Impact 2	Not significant	No additional measures are required in addition to those listed in section 10.9	Not significant
Transboundary			
None	Scoped out of assessment.		

10.17 References

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