codling wind park

Environmental Impact Assessment Report

Volume 3

Chapter 25 Air Quality


codling
wind park

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Abbreviations

Abbreviation	Term in Full
µg/m^3	Micrograms per cubic metre of air
AADT	Annual Average Daily Traffic
ABP	An Bord Pleanála
CAFE	Cleaner Air for Europe
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CO_2	Carbon dioxide
CSO	Central Statistics Office
CEA	Cumulative Effects Assessment
CWP	Codling Wind Park
CWP OIW	CWP onshore infrastructure works
CWPL	Codling Wind Park Limited
DCC	Dublin City Council
DECC	Department of Environment, Climate and Communications
DMRB	Design Manual for Roads and Bridges
EC	European Commission
EIA	Environmental Impact Assessment
EIA Report	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ESBN	ESB Networks
EU	European Union
GHG	Greenhouse Gas
GIS	Geographic Information System
GIS (switchgear)	Gas insulated switchgear
HDV	Heavy duty vehicle
HGV	Heavy goods vehicles
IAQM	Institute of Air Quality Management
km	Kilometre
km/hr	Kilometre per hour
LoD	Limit of Deviation
NHA	Natural Heritage Area

$NO + NO_2$	Nitrogen Oxides
NO_2	Nitrogen Dioxide
NRMM	Non-road mobile machinery
O&M	Operations and maintenance
OfTI	Offshore transmission infrastructure
OTI	Onshore transmission infrastructure
OWF	Offshore windfarm
PM_{10} & $PM_{2.5}$	Particulate matter with a diameter of 10 micrometres or 2.5 micrometres
pNHA	Proposed Natural Heritage Area
SAC	Special Area of Conservation
SF_6	Sulphur hexafluoride
SPA	Special Protection Area
TII	Transport Infrastructure Ireland
TJB	Transition joint bay
UKHA	UK Highways Agency
VDI	Verein Deutscher Ingenieure (German Technical Instructions on Air Quality Control)
WHO	World Health Organization
WTG	Wind turbine generator

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL).
Codling Wind Park Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works.
Codling Wind Park Limited	A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project.
Environmental Impact Assessment (EIA)	A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation.
Environmental Impact Assessment Report (EIAR)	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
Environmental Impact Assessment	A systematic means of assessing a development projects likely significant effects undertaken in accordance with the EIA Directive.
Environmental Impact Assessment Report	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
Environmental Protection Agency (EPA)	National agency responsible for protecting and improving the environment of Ireland under the Environmental Protection Agency Acts 1992 to 2011.
ESB Networks (ESBN)	Owner of the electricity distribution system in the Republic of Ireland, responsible for carrying out maintenance, repairs and construction on the grid.
ESBN network cables	Three onshore export cable circuits connecting the onshore substation to the proposed ESBN Poolbeg substation, which will then transfer the electricity onwards to the national grid.
European Commission (EC)	The executive body of the European Union responsible for proposing legislation, enforcing European law, setting objectives and priorities for action, negotiating trade agreements and managing implementing European Union policies and the budget.
European site	European sites are a European network of important ecological sites, made up of Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC), and SACs, established under the Habitats Directive (92/43/EEC). European sites are also often referred to as Natura 2000 sites.
European Union (EU)	This is the political and economic union of 27 member states primarily located in Europe.
export cables	The cables, both onshore and offshore, that connect the offshore substations with the onshore substation.
landfall	The point at which the offshore export cables are brought onshore and connected to the onshore export cables via the transition joint bays

	(TJB). For the CWP Project The landfall works include the installation of the offshore export cables within Dublin Bay out to approximately 4 km offshore, where water depths that are too shallow for conventional cable lay vessels to operate.
limit of deviation (LoD)	Locational flexibility of permanent and temporary infrastructure is described as a LoD from a specific point or alignment.
Met Éireann	Met Éireann is the Irish National Meteorological Service, the leading provider of weather information and related services for Ireland.
offshore export cables	The cables which transport electricity generated by the wind turbine generators (WTGs) from the offshore substation structures (OSSs) to the TJBs at the landfall.
offshore development area	The total footprint of the offshore infrastructure and associated temporary works including the array site and the OECC.
offshore infrastructure	The permanent offshore infrastructure, comprising of the WTGs, IACs, OSSs, interconnector cables, offshore export cables and other associated infrastructure such as cable and scour protection.
offshore transmission infrastructure (OfTI)	The offshore transmission assets comprising the OSSs and offshore export cables. The EIAR considers both permanent and temporary works associated with the OfTI.
onshore development area	The entire footprint of the OTI and associated temporary works that will form the onshore boundary for the planning application.
onshore export cables	The cables which transport electricity generated by the WTGs from the TJBs at the landfall to the onshore substation.
onshore substation	Site containing electrical equipment to enable connection to the national grid.
onshore substation site	The area within which permanent and temporary works will be undertaken to construct the onshore substation.
onshore transmission infrastructure (OTI)	The onshore transmission assets comprising the TJBs, onshore export cables and the onshore substation. The EIAR considers both permanent and temporary works associated with the OTI.
operations and maintenance (O&M) activities	Activities (e.g., monitoring, inspections, reactive repairs, planned maintenance) undertaken during the O&M phase of the CWP Project.
O&M phase	This is the period of time during which the CWP project will be operated and maintained.
parameters	Set of parameters by which the CWP Project is defined and which are used to form the basis of assessments.
planning application boundary	The area subject to the application for development consent, including all permanent and temporary works for the CWP Project.
Poolbeg 220kV substation	This is the ESBN substation that the ESBN network cables connect into, from the onshore substation. This substation will then transfer the electricity onwards to the national grid
receptor	Environmental component that may be affected, adversely or beneficially, by the project.

revetment	A facing of impact-resistant material applied to a bank or wall in order to absorb the energy of incoming water and protect it from erosion.
study area	Study areas are defined for each receptor based on the relevant characteristics of the receptor (e.g. mobility/range), some receptors may have different study areas defined at different scales (e.g. local, regional, management unit level etc.)
transition joint bay (TJB)	This is required as part of the OTI and is located at the landfall. It is an underground bay housing a joint which connects the offshore and onshore export cables.
wind turbine generator	All the components of a wind turbine, including the tower, nacelle, and rotor.
zone of influence	Spatial extent of potential impacts resulting from the project.

25 AIR QUALITY

25.1 Introduction

1. Codling Wind Park Limited (hereafter 'the Applicant') is proposing to develop the Codling Wind Park (CWP) Project, a proposed offshore wind farm (OWF) located in the Irish Sea approximately 13 - 22 km off the east coast of Ireland, at County Wicklow.

2. This chapter forms part of the Environmental Impact Assessment Report (EIAR) for the CWP Project. The purpose of the EIAR is to provide the decision-maker, stakeholders and all interested parties with the environmental information required to develop an informed view of any likely significant effects resulting from the CWP Project, as required by the European Union (EU) Directive 2011/92/EU (as amended by Directive 2014/52/EU) (the EIA Directive).

3. This EIAR chapter describes the potential impacts of the CWP Project's Onshore Transmission Infrastructure (OTI) on air quality during the construction, operation and maintenance and decommissioning phases. Potential impacts of the CWP Project's Offshore Transmission Infrastructure (OfTI) on air quality have been scoped out as there are no relevant sensitive receptors impacted by the OfTI works.

4. The OTI is situated on the Poolbeg Peninsula and includes the transition joint bays (TJBs), onshore export cables, the onshore substation, and the Electricity Supply Board Networks (ESBN) network cables to connect the onshore substation to the Poolbeg 220 kV substation. This chapter will also describe the potential impacts of the works at the landfall (landward of the high water mark (HWM)), where the offshore export cables are brought onshore and connected to the onshore export cables at the TJBs (hereafter all these works are referred to as the 'OTI').

5. In summary, this EIAR chapter:

   - Details the EIA scoping and consultation process undertaken and sets out the scope of the impact assessment for air quality;
   - Identifies the key legislation and guidance relevant to air quality, with reference to the latest updates in guidance and approaches;
   - Confirms the study area for the assessment and presents the impact assessment methodology for air quality;
   - Describes and characterises the baseline environment for air quality, established from desk studies, project data and consultation;
   - Defines the project design parameters for the impact assessment and describes any primary mitigation measures (described in **Section 25.9**) relevant to the air quality assessment;
   - Presents the assessment of potential impacts on air quality and identifies any assumptions and limitations encountered in compiling the impact assessment; and
   - Details any additional mitigation and/or monitoring necessary to prevent, minimise, reduce or offset potentially significant effects identified in the impact assessment.

6. The assessment should be read in conjunction with **Appendix 25.1 Cumulative Effects Assessment**, which considers other plans, projects and activities that may act cumulatively with the CWP Project and provides an assessment of the potential cumulative impacts on air quality.

7. A summary of the cumulative effects assessment (CEA) for air quality is presented in **Section 25.11**.

25.2 Consultation

8. Consultation with statutory and non-statutory organisations is a key part of the EIA process. Consultation with regard to air quality has been undertaken to inform the approach to and scope of the assessment.

9. The key elements to date have included EIA scoping, consultation events and meetings with key stakeholders. The feedback received throughout this process has been considered in preparing the EIAR. EIA consultation is described further in **Chapter 5 EIA Methodology**, the **Planning Documents** and in the **Public and Stakeholder Consultation Report**, which has been submitted as part of the planning application.

10. **Table 25-1** provides a summary of the key issues raised during the consultation process relevant to air quality and details how these issues have been considered in the production of this EIAR chapter. No other consultation responses relevant to air quality were received.

Table 25-1 Consultation responses relevant to air quality

Consultee	Comment	How issues have been addressed
Scoping responses		
South East Coastal Protection Alliance	Raised the topics of air, noise and scour protection (relating to offshore works).	Offshore impacts to air quality are considered and scoped out in **Section 25.4.1**.
Topic specific meetings		
n/a	No air quality specific comments made.	n/a
Other		
Transition year students of Coláiste Chraobh Abhann in Kilcoole	In relation to the OTI, air quality was broadly mentioned by students as needing to be considered in any onshore proposals.	Impacts of the OTI on air quality scoped in and out of assessment are discussed in **Section 25.7**, with the methodology for assessing the scoped in impacts given in **Section 25.4**.The impacts and significance of effects are discussed in **Section 25.10**.

25.3 Legislation and guidance

25.3.1 Legislation

11. The legislation that is applicable to the assessment of air quality is summarised below. **Chapter 2 Policy and Legislative Context** of this EIAR sets out the general legislative and policy context for the overall EIA. This section provides more detail on the legislation and policies that are applicable to the assessment of air quality impacts.

Ambient air quality standards

12. The applicable air quality standards in Ireland are the Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022), which incorporate EU Council Directive 2008/50/EC (on ambient air quality and cleaner air for Europe) (CAFE Directive). The CAFE Directive combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC) also includes ambient limit values relating to Particulate Matter (as $PM_{2.5}$).

13. The limit values or "Air Quality Standards" set out in the Ambient Air Quality Standards Regulations and the CAFE Directive are health or environmental-based levels (see **Table 25-2**). The applicability of these standards is noted in **Section 25.4.3**.

Table 25-2 Ambient Air Quality Standards Regulations 2022 (based on EU Council Directive 2008/50/EC)

Pollutant	Regulation	Limit Type	Value
Nitrogen Dioxide (NO_2)	S.I. 739 of 2022	Hourly limit for protection of human health - not to be exceeded more than 18 times / year	200 µg/m^3 NO_2
	S.I. 739 of 2022	Annual limit for protection of human health	40 µg/m^3 NO_2
Nitrogen Oxides (NO + NO_2)	S.I. 739 of 2022	Critical limit for the protection of vegetation and natural ecosystems	30 µg/m^3 NO + NO_2
Particulate Matter (as PM_{10})	S.I. 739 of 2022	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3 PM_{10}
		Annual limit for protection of human health	40 µg/m^3 PM_{10}
Particulate Matter (as $PM_{2.5}$)	S.I. 739 of 2022	Annual limit for protection of human health	25 µg/m^3 $PM_{2.5}$

14. The World Health Organization (WHO) has published Air Quality Guidelines for the protection of human health (hereafter referred to as the WHO Guidelines) (WHO, 2006; WHO, 2021). The WHO Guidelines detail values relating to NO_2, PM_{10} and $PM_{2.5}$. The 2005 WHO Guideline values are more stringent than the EU statutory limit values for PM_{10} and $PM_{2.5}$, with the 2021 updates further reducing recommended concentrations. In relation to NO_2, the compliance limit values are equivalent.

15. However, the WHO one-hour guideline value is an absolute value, whilst the EU standards allow this limit to be exceeded for 18 hours / annum without breaching the statutory limit value. The WHO Guidelines recognise that these levels are essentially unachievable in most countries and, indeed, also provide interim targets for the years when the full guidelines aim to be achieved. It should be noted that the targets are intended for populations rather than for individual receptors. The guidelines (WHO, 2021) state:

"Currently, the accumulated evidence is sufficient to justify actions to reduce population exposure to key air pollutants, not only in particular countries or regions but on a global scale."

16. In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland, which provides a high-level strategic policy framework to reduce air pollution. 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 25-3**). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m^3. The strategy also acknowledges that *"meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2"*. Ireland will revise its air quality legislation in line with the proposed EU revisions to the CAFE Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets.

Table 25-3 WHO Global Air Quality Guidelines 2021

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 $PM_{2.5}$	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 $PM_{2.5}$

17. The WHO Guidelines are not statutory limits and the revisions to the EU CAFE Directive are not yet in effect. For the purposes of this assessment, the appropriate limits for the assessment of air quality impacts are those outlined in the Ambient Air Quality Standards Regulations 2022. These are the mandatory standards for ambient air quality which must be complied with in Ireland.

18. With regards to larger dust particles that can give rise to nuisance dust, there are no statutory limits or guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Dublin City Council (DCC) has published a guidance document titled 'Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition'. However, this guidance does not specify a guideline value for dust deposition (DCC, 2018). This guidance aims to ensure that demolition and construction work does not have an adverse impact on sensitive receptors near construction works, and therefore it is a local guidance document which provides best-practice dust-control measures appliable to the construction phase.

19. The Verein Deutscher Ingenieure (VDI) German Technical Instructions on Air Quality Control – TA Luft standard for dust deposition (VDI, 2002; known as the TA Luft standard) (non-hazardous dust) sets a maximum permissible emission level for dust deposition of 350 mg / m^2 / day averaged over a one-year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Health & Local Government (DEHLG, 2004) apply the TA Luft standard for dust

deposition of 350 mg / m^2 / day to the site boundary of quarries. Due to the absence of more specific guidance, this is considered a suitable limit value to prevent nuisance dust impacts from construction of the onshore infrastructure works.

25.3.2 Policy

20. The overarching planning policy relevant to the CWP Project is described in EIAR **Chapter 2 Policy and Legislative Context**.

21. The assessment of the CWP Project against relevant planning policy is provided in the **Planning Report**. This includes planning policy relevant to air quality.

25.3.3 Guidance

22. The assessment has made reference to national guidelines where available, in addition to the most relevant and applicable international standards and guidelines relating to the assessment of air quality impacts. These are summarised below:

- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management (IAQM) (hereafter referred to as the IAQM Guidance) (IAQM, 2024);
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EC, 2013); and
- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland (TII), 2022).

23. In addition to specific air quality guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment (Department of Environment, Community and Local Government, August 2018);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003); and
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017).

25.4 Impact assessment methodology

24. **Chapter 5 EIA Methodology** provides a summary of the general impact assessment methodology applied to the CWP Project, which includes the approach to the assessment of transboundary and inter-related effects. The approach to the assessment of cumulative impacts is provided in **Chapter 5**, **Appendix 5.1 CEA Methodology**.

25. The following sections confirm the methodology used to assess the potential impacts on air quality.

25.4.1 General approach

Construction phase

26. The air quality assessment for the construction phase has addressed:

- The effects from construction dust resulting from construction activities;
- The effects on air quality receptors from and construction phase non-road mobile machinery (NRMM); and
- The effects on air quality receptors from an increase in traffic numbers associated with construction activities.

27. A construction phase dust assessment has been undertaken in accordance with the IAQM Guidance. An initial screening determines whether a detailed assessment is required. According to the IAQM Guidance, an assessment is required where there are sensitive receptors within 250 m of the site boundary, for ecological receptors within 50 m of the site boundary and/or within 50 m of the route(s) used by the construction vehicles on the public highway, and up to 250 m from the entrance(s) of a large site. There are sensitive dust and human health receptors within 250 m of the site boundary so therefore an assessment of the air quality effects is required (see **Section 25.4.4** for methodology and **Section 25.10.1** for impact assessment). Receptor sensitivity is defined and discussed in **Section 25.4.4**.

28. The construction stage traffic was reviewed in line with the relevant TII assessment criteria in **Section 4.9.3.4** of PE-ENV-01106 (TII, 2022) to determine whether a detailed air quality assessment of traffic emissions was required:

- Road alignment will change by 5 m or more;
- Annual average daily traffic (AADT) flows will change by 1,000 or more;
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more;
- Daily average speed change by 10 kph or more; or
- Peak hour speed will change by 20 kph or more.

29. Approximately 110 AADT flows (62 of which are HDV) are expected to be generated as a result of the construction phase. The construction stage traffic does not meet any of the screening criteria and therefore a detailed air quality assessment of construction stage traffic emissions was screened out.

30. Emissions from construction phase NRMM, such as mechanical excavators and earthmovers, will have the potential to increase NO_2 and PM_{10} concentrations locally, when in use within the construction site boundary. According to IAQM guidance (IAQM, 2024), experience of assessing the exhaust emissions from on-site plant (NRMM) and on-site traffic suggests that they are unlikely to have a significant effect on local air quality, due to the intermittent nature of their use within the confinement of the site boundary, and therefore do not need to be quantitatively assessed. Emissions from NRMM associated with the CWP Project will be temporary and localised, and controlled via the adherence to emissions standards established by Regulation (EU) 2016/1628 and through best-practice mitigation measures (IAQM, 2024 and **Section 25.10**). For that reason, construction phase NRMM emissions are highly unlikely to be significant and, therefore, have not been considered further in this assessment.

31. Construction vessel movements have been reviewed, as per **Chapter 4 Project Description.** The main pollutants of concern associated with vessel movements are nitrogen oxides (NOx), particulate matter (PM) and sulphur dioxide (SO_2). Shipping emissions are regulated under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), enacted by the International Maritime Organization.

32. Pollutant concentrations should only be compared to the relevant air quality limit values where there is representative exposure. There are no offshore human receptors which are sensitive to air quality, and marine-based ecological designations are unlikely to be sensitive to air pollution impacts, or they are usually dominated by other sources of inputs (Centre for Ecology and Hydrology, 2024). The main receptors which may be affected would be a small number of isolated locations of relevant human exposure (e.g. residences) close to the shoreline and land-based designated ecological sites. Engine exhausts from construction vessels will provide a small additional contribution to atmospheric emissions from existing sea traffic.

33. The number of vessels required during construction (approx. 86) will be minimal and the associated atmospheric emissions will be small in comparison to those from the total shipping in this region of the Irish Sea. Most construction works would be carried out at a distance from the shore, being centred on the wind farms themselves. Additionally, the dispersive nature of offshore winds means concentrations of pollutants will return to background levels quickly. Given the likely negligible increases of air pollutants on site, the regulation of emissions under MARPOL and the distance from any shore-based receptors, it is expected that effects would be insignificant. It is therefore proposed that all offshore air quality impacts should be scoped out from further consideration in this assessment.

Operation and maintenance phase

34. The greatest potential impact on air quality associated with the operation and maintenance phase is from traffic emissions.

35. With regard to traffic, the onshore substation will be generally unmanned during the operational and maintenance phase. There will maintenance visits on average of c. 1 per week.

36. The traffic generated during this phase was reviewed in line with Section 4.3.3 of PE-ENV-01106 (TII, 2022), which sets out relevant thresholds for triggering an assessment of air quality impacts from operational stage traffic, as follows:

- Road alignment will change by 5 metres (m) or more;
- AADT flows will change by 1,000 or more;
- HDV (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more;
- Daily average speed change by 10 kph or more; or
- Peak hour speed will change by 20 kph or more.

37. There are a number of OTI activities during the operational phase. A backup diesel generator will be on site and will operate in an emergency i.e. in the event of the loss of power. Business as usual (BAU) plant operation and standard maintenance activities, such as periodic cleaning and repairs during the operation of the OTI will also occur. There are no significant emissions to air from these activities that will have a potential impact on air quality. There are no other sources of significant emissions to air during the operational phase.

38. On the basis that operational traffic impacts (see **Chapter 27 Traffic and Transport**) will not exceed applicable guidance thresholds, and emissions from backup generation plant are expected to be minimal, these effects are not considered significant. Accordingly, no further consideration of the effects from the operation and maintenance of the OTI on the surrounding air quality is considered necessary.

39. Operational and maintenance vessel movements have been reviewed, as per **Chapter 4 Project Description**, The main pollutants of concern associated with vessel movements are nitrogen oxides (NOx), particulate matter (PM) and sulphur dioxide (SO_2). Shipping emissions are regulated under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL),

enacted by the International Maritime Organization. Pollutant concentrations should only be compared to the relevant air quality limit values where there is representative exposure.

40. There are no offshore human receptors which are sensitive to air quality, and marine-based ecological designations are unlikely to be sensitive to air pollution impacts, or they are usually dominated by other sources of inputs (Centre for Ecology and Hydrology, 2024). The main receptors which may be affected would be a small number of isolated locations of relevant human exposure (e.g. residences) close to the shoreline and land-based designated ecological sites. Engine exhausts from operations and maintenance (O&M) vessels will provide a small additional contribution to atmospheric emissions from existing sea traffic.

41. The number of vessels (between 8 and 13) required annually during O&M will be minimal, and the associated atmospheric emissions will be small in comparison to those from the total shipping in this region of the Irish Sea. Most O&M works would be carried out at a distance from the shore, being centred on the wind farms themselves. Additionally, the dispersive nature of offshore winds means concentrations of pollutants will return to background levels quickly. Given the likely negligible increases of air pollutants on site, the regulation of emissions under MARPOL and the distance from any shore-based receptors, it is expected that effects would be insignificant. It is therefore proposed that all offshore air quality impacts should be scoped out from further consideration in this assessment.

Decommissioning phase

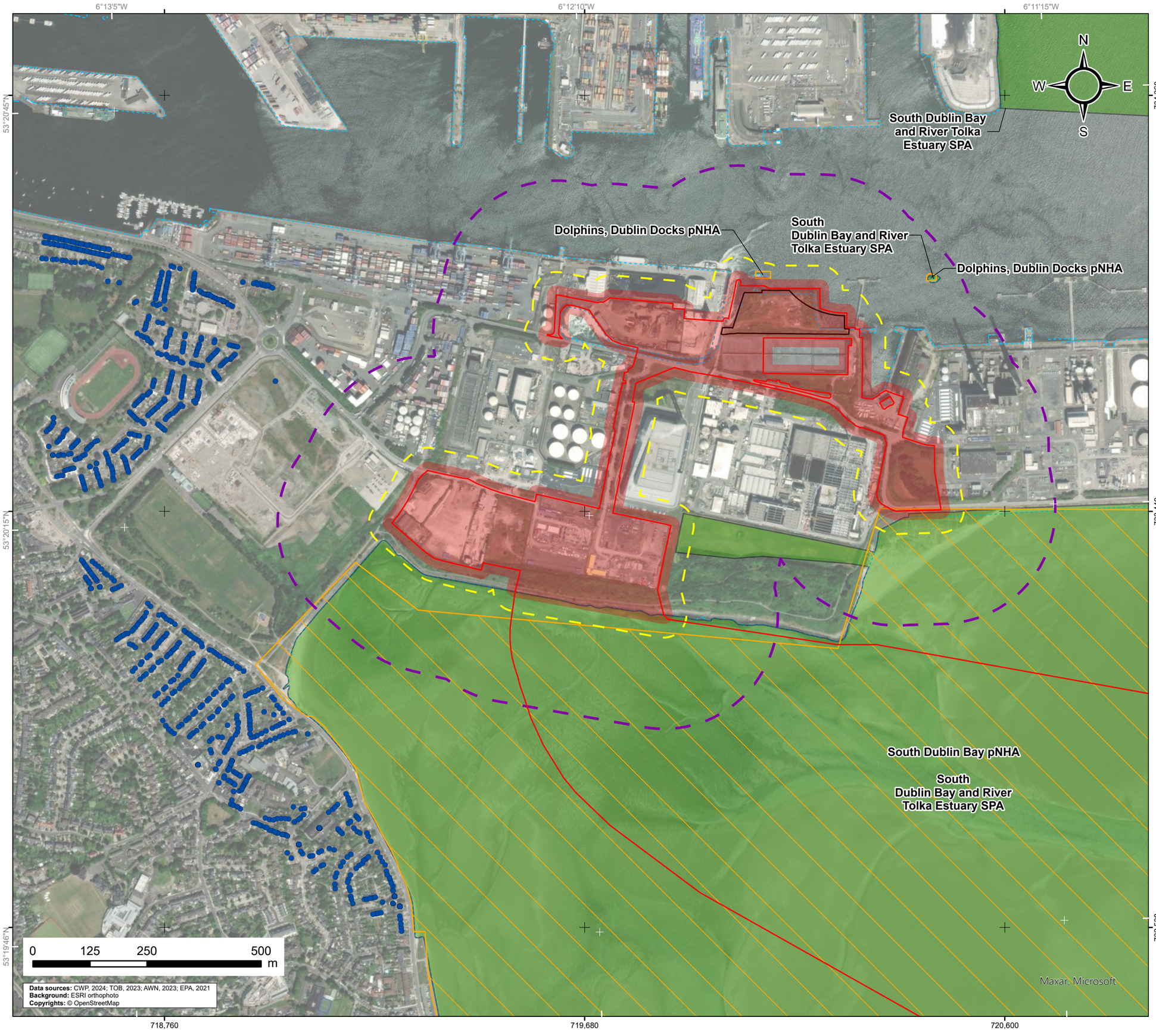
42. The greatest potential impact on air quality during the decommissioning phase is from dust emissions from the demolition and removal of buildings and materials, road traffic emissions and NRMM emissions. These impacts are predicted to be no greater than those identified during the construction phase, with the exception of where demolition of the OTI infrastructure is required. This phase has been assessed as per the construction phase methodology outlined above in **Section 25.4.1 Construction phase** (road traffic effects) and **Section 25.4.4** (construction dust effects). As per this methodology, road traffic emissions and NRMM emissions are scoped out of this assessment.

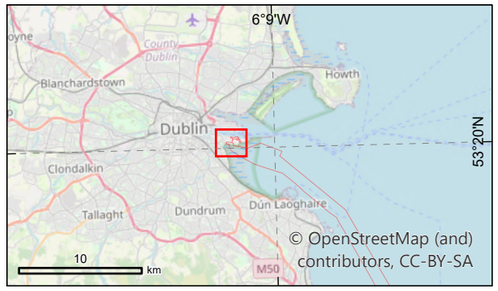
25.4.2 Study area

43. The study area for the air quality impact assessment was defined by the area where there is potential for air quality impacts at sensitive receptors associated with the onshore development area during the construction and decommissioning phases. The methodology for defining and selecting sensitive receptors is described in more detail in **Section 25.4.4**.

44. During the construction phase, emissions from construction dust generated by construction activities may impact air quality. In line with the IAQM Guidance, the study area for the air quality impact assessment was defined by the area where there is potential for air quality impacts at sensitive receptors. The extent of the overall study area for construction dust impacts is up to a maximum of 250 m from a specific area of construction work, as per the IAQM Guidance) (IAQM, 2024).

45. Air quality high-sensitivity receptors include areas where people spend significant periods of time, such as residential dwellings, schools and other educational establishments, hospitals and nursing homes, as well as designated habitats. Sensitive receptors identified within the study area are the Coastguard Cottages, the wider Ringsend residential area, the planned residential development at the former Irish Glass Bottle Site, the South Dublin Bay Special Area of Conservation (SAC) and proposed Natural Heritage Area (pNHA), the South Dublin Bay and River Tolka Estuary Special Area of Protection (SPA), and the Dolphin, Dublin Docks pNHA. These receptors are highlighted in **Figure 25-1**.





Legend

- Planning application boundary
- Onshore substation boundary (operational)
- High water mark
- Residential properties
- 20 m buffer from the onshore development area
- 50 m buffer from the onshore development area
- 250 m buffer from the onshore development area
- proposed National heritage areas (pNHAs)
- Special protection areas (SPAs)

codling wind park

Project: Codling Wind Park

Contractor: TOBIN

Website: www.tobin.ie

Figure 25.1
Location of air quality sensitive receptors

CWP doc. number: CWP-TOB-ENG-08-01-MAP-0964

Internal descriptive code: PB - PAB..PB.RLB.BUFF.20m.50m.350m..SS.PP.PL - RESIDENT.PROPERTY.DENSITY..HWM..pNHAs..SPAs - (SAT..EIAR.FIG.25.01)

Size: A3

Scale: 1:8,000

CRS: EPSG 2157

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	2024/08/15	SP	DM/EA	ES

25.4.3 Data and information sources

Site-specific surveys

46. TII PE-ENV-01106 guidance (TII, 2022) Section 4.2.2 states that site specific air quality monitoring should only be undertaken on a proposed scheme where a quantitative local air quality assessment is being undertaken. Additionally, the need to undertake project specific air quality monitoring depends upon the availability of existing air quality data and the complexity of a proposed project. Sufficient existing air quality monitoring data is available from the EPA, described in **Section 25.6.2**.

47. The impact of traffic generated by the OTI was assessed against the TII PE-ENV-01106 guidance criteria (TII, 2022) in **Section 25.4.1,** using traffic data provided in **Chapter 27 Traffic and Transport**. Based on that assessment, the impact of traffic generated in all CWP Project phases has been scoped out of a quantitative local air quality assessment (see **Section 25.4.1**).

48. Therefore, no site-specific survey was required for the air quality assessment. All other information required to complete the impact assessment was available via a desk-based review.

Desk study

49. A comprehensive desk-based review was undertaken to inform the baseline for air quality. Key data sources used to inform the assessment are set out in **Table 25-4**.

50. Meteorological data in the form of hourly wind speed and wind direction over the period 2018–2022 was sourced from the Met Éireann website, and is discussed in more detail in **Section 25.6.1**.

51. To establish the baseline air quality for the CWP Project, air quality monitoring data collected by the EPA for the period 2018–2022 was reviewed using the most recent annual report (as well as those from previous years) on air quality 'Air Quality in Ireland 2022*'* (EPA, 2023). This data is discussed in more detail in **Section 25.6.1.**

Table 25-4 Data sources

Data	Source	Date	Notes
Baseline air quality data	Environmental Protection Agency report 'Air Quality in Ireland 2022'	2023	–
Meteorological data	Met Éireann website https://www.met.ie/climate/available-data/historical-data	09/01/2024	Most recent date accessed.

25.4.4 Impact assessment

52. The air quality assessment deviates from the overall methodology set out in **Chapter 5 EIA Methodology**. Specific methodologies are required by the relevant guidance for air quality, given in **Section 25.3.3**.

53. Based on the impacts scoped in for assessment (see **Section 25.4.1**and **Section 25.7**), a methodology is set out below for the construction phase dust assessment.

Construction phase dust assessment

54. The construction phase dust assessment has been undertaken in accordance with the IAQM Guidance.

55. The IAQM Guidance considers the potential for dust emissions from dust-generating activities including:

- Demolition of existing structures;
- Earthworks;
- Construction of new structures; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

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

57. For each of these dust-generating activities, the guidance considers three separate effects:

- Annoyance due to dust soiling;
- The risk of health effects due to a significant increase in PM_{10} exposure; and
- Harm to ecological receptors.

58. The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and PM_{10} exposure. The sensitive receptors are listed in **Section 25.4.2** and **Section 25.10.1**.

59. The main steps in the assessment are:

- For each category of construction (demolition, earthworks, construction and trackout):
    - Determine the sensitivity of the area (taking existing baseline conditions detailed in **Section 25.6** into account);
    - Determine the potential dust-emission magnitude; and
    - Establish the risk of dust impacts.
- Detail any required site-specific mitigation; and
- Confirm any potential residual effects.

Sensitivity of receptor

60. In line with the IAQM Guidance, prior to assessing the impact of dust from a CWP Project, the sensitivity of the area must first be assessed as outlined below. The sensitivity of the area is determined by taking into account the type of individual receptor and its sensitivity, the number of individual receptors, their proximity to proposed works areas and the background PM_{10} concentration. Individual receptor sensitivity to dust soiling, health effects of PM_{10} and ecological effects are defined in Section 7.3 of the IAQM Guidance and can be categorised as High, Medium or Low sensitivity and are reproduced in **Table 25-5**.

Table 25-5 Definition of individual receptor sensitivity to dust soiling, health effects of PM_{10} and ecological effects

	Definition of sensitivity for individual receptors		
	High	**Medium**	**Low**
Dust soiling	Locations where: • users can reasonably expect enjoyment of a high level of amenity; or • the appearance, aesthetics or value of their property would be diminished by soiling; and • the people or property would reasonably be expected to be present continuously, or at least regularly, for extended periods, as part of the normal pattern of use of the land. • Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks, and car showroom.	Locations where: • users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or • the appearance, aesthetics or value of their property could be diminished by soiling; or • the people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Indicative examples include parks and places of work.	Locations where: • the enjoyment of amenity would not reasonably be expected; or • property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or • there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Indicative examples include playing fields, farmland (unless commercially sensitive horticultural land), footpaths, short-term car parks and roads.
Health effects of PM_{10}	Locations where: • members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered to have equal sensitivity as residential areas for the	Locations where: • the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM10, as their protection is covered by Health and	Locations where: • human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.

	Definition of sensitivity for individual receptors		
	High	**Medium**	**Low**
	purposes of this assessment.	Safety at Work legislation.	
Ecological effects	Locations with: • an international or national designation and the designated features may be affected by dust soiling. • Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.	Locations where: • there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Natural Heritage Area (NHA) with dust-sensitive features.	Locations with: • a local designation where the features may be affected by dust deposition. • Indicative example is a local nature reserve with dust-sensitive features.

61. The definitions of area sensitivity for the purpose of the air quality assessment are provided in **Table 25-6, Table 25-7** and **Table 25-8**.

62. The sensitivity of the area to dust-soiling impacts is considered using the sensitivity criteria outlined in **Table 25-6**.

Table 25-6 Sensitivity of the area to dust-soiling effects on people and property

Individual receptor sensitivity	Number of receptors	Distance from source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10–100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

63. In addition to sensitivity to dust soiling, the IAQM Guidance also outlines the assessment criteria for determining the sensitivity of the area to human health impacts. The sensitivity of the area to human health impacts are considered using the sensitivity criteria outlined in **Table 25-7**. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as 'High' sensitivity) and the number of receptors affected within various distance bands from the construction works.

Table 25-7 Sensitivity of the area to human health impacts

Individual receptor sensitivity	Annual mean PM_{10} concentration	Number of receptors	Distance from source (m)			
			<20	<50	<100	<250
High	< 24µg/m^3	>100	Medium	Low	Low	Low
		10–100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24µg/m^3	>1	Low	Low	Low	Low

64. Dust deposition impacts on ecology can occur due to chemical or physical effects. This includes reduction in photosynthesis due to smothering from dust on the plants and chemical changes such as to acidity in soils. Often, impacts will be reversible once the works are completed and dust deposition ceases. Designated sites within 50 m of the boundary of the site or within 50 m of the onshore development area used by construction vehicles on public highways, up to a distance of 250 m from a construction site entrance, can be affected, according to the IAQM Guidance. The sensitivity of the area to ecological impacts is considered using the sensitivity criteria outlined in **Table 25-8**.

Table 25-8 Sensitivity of the area to ecological impacts

Receptor sensitivity	Distance from source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Magnitude of impact

65. The scale or magnitude of potential impacts (both beneficial and adverse) depends on the degree and extent to which the CWP Project activities may change the environment, which usually varies according to project phase (i.e., construction, O&M and decommissioning).

66. In order to determine the level of dust mitigation required during the proposed works, the potential dust-emission magnitude for each dust-generating activity needs to be taken into account, in conjunction with the sensitivity of the area. The IAQM Guidance sets out the following parameters to assist in determining the magnitude of impacts.

Demolition

67. The dust-emission magnitude from demolition can be classified as small, medium or large based on the definitions from the IAQM Guidance as transcribed below:

- **Large**: Total building volume > 75,000 m^3, 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
- **Small**: 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

68. Earthworks primarily involve general site clearance, excavating material in an open cut manner at the landfall, onshore substation and trenching to lay the onshore export cable, backfilling these locations, loading and unloading materials, and tipping and stockpiling activities. Activities such as cut and fill, levelling the site and landscaping works are also considered under this category. The dust-emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM Guidance as transcribed below:

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

Construction

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

- **Large**: Total building volume > 75,000 m^3, on-site concrete batching, sandblasting;
- **Medium**: Total building volume 12,000 m^3–75,000 m^3, potentially 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

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

- **Large**: > 50 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 50–100 m; and
- **Small**: < 20 HDV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

Significance of effect

71. For construction dust, the IAQM Guidance does not provide a method for the evaluation of the significance of its impacts on receptors; rather it provides a means to determine the level of mitigation required to avoid significant effects on receptors.

72. The level of risk identified determines the appropriate mitigation measures to ensure residual effects are not significant. A matrix is therefore not provided in the IAQM Guidance to determine significance.

73. The magnitude of each construction activity (demolition, earthworks, construction and trackout) is assessed and combined with the sensitivity of the area to define the risk of dust impacts before mitigation (refer to **Table 25-9**). The dust risk categories for each of the four activities should be used to define the appropriate site-specific mitigation measures to be adopted.

74. The IAQM Guidance outlines general mitigation measures as well as measures specific to each dust-generating activity, each with a recommendation for applicability depending on whether a high, medium and low risk of dust effects has been identified. General mitigation measures recommended by the IAQM Guidance relate to site management, monitoring, preparing and maintaining the site, operating vehicles and machinery, operations and waste management. Measures specific to demolition, earthwork, construction and trackout are also recommended by the IAQM Guidance.

Table 25-9 Determination of risk of dust impacts

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Negligible
Low	Low risk	Low risk	Negligible

75. Professional judgement has been used to determine the significance of the IAQM-guided risks in EIA terms as per the EPA Guidelines (EPA, 2022).

25.5 Assumptions and limitations

76. No assumptions or limitations have been identified for the air quality assessment.

25.6 Existing environment

77. The following sections provide a description of the baseline conditions for air quality.

25.6.1 Meteorological conditions

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

79. The nearest representative weather station collating detailed weather records is Dublin Airport, which is located approximately 10 km northwest of the onshore development area and is considered representative of the CWP Project. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see **Plate 25-1**). For data collated during the five representative years (2019–2023), the predominant wind direction is westerly to south-westerly, with generally moderate wind speeds averaging 5.4 m/s for the period 1991–2020 (Met Éireann, 2023).

80. In addition, on days where rainfall is greater than 0.2 mm, dust generation is suppressed and is considered negligible (IAQM, 2024; UK ODPM, 2002). A review of historical 30-year average data for Dublin Airport meteorological station indicates that, on average, 200 days per year have rainfall over 0.2 mm (Met Éireann, 2023) and therefore it can be determined that 55% of the time dust generation will be suppressed.

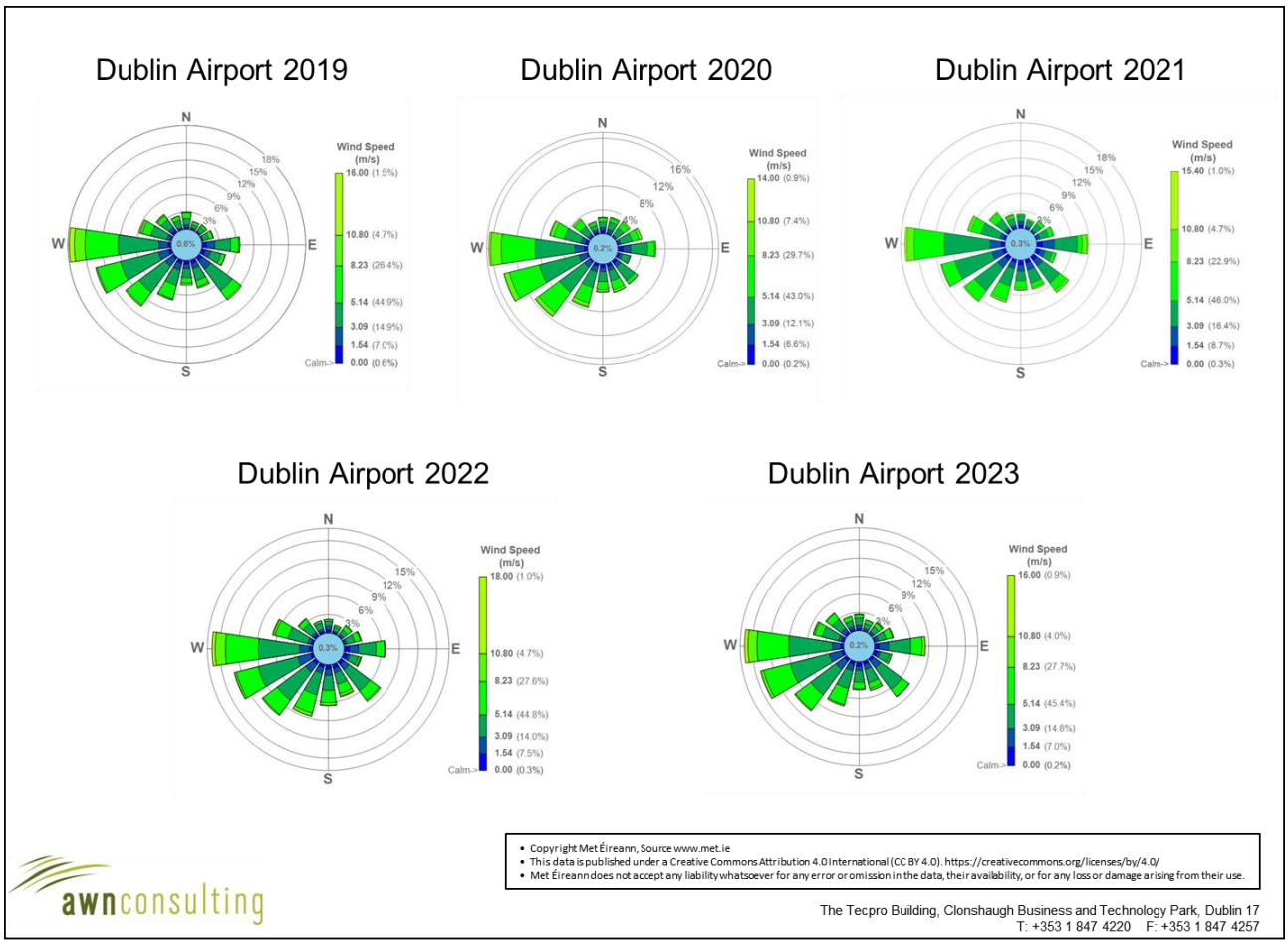


Plate 25-1 Dublin Airport wind rose: 2019–2023

25.6.2 Baseline ambient air quality

81. Air quality monitoring programmes have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality, 'Air Quality in Ireland 2022' (EPA, 2023), details the range and scope of monitoring undertaken throughout Ireland.

82. As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2023). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population less than 15,000, is defined as Zone D. In terms of air monitoring, Poolbeg is located within Zone A.

83. In 2020, the EPA reported (EPA, 2023) that Ireland was compliant with EU legal air quality limits at all locations; however, this was largely due to the reduction in traffic due to Covid-19 restrictions. The EPA 'Air Quality in Ireland 2020' report details the effect that the Covid-19 restrictions had on air monitoring stations, which included reductions of up to 50% at some monitoring stations which have traffic as a dominant source. The report also notes that Central Statistics Office (CSO) figures show that, whilst traffic volumes are still slightly below 2019 levels, they have significantly increased from 2020 levels. 2020 concentrations are therefore considered to be an exceptional year and not consistent with long-term trends. They have been included in the baseline section but omitted from

calculating long-term data trends used to determine baseline levels of pollutants in the vicinity of the CWP Project.

PM_{10}

84. Continuous PM_{10} monitoring carried out by the EPA (EPA, 2023) at the suburban and urban background locations of Ballyfermot, Dún Laoghaire, Finglas, Marino, Phoenix Park, St. Anne's Park and Rathmines showed annual mean concentrations ranging from 11–15 µg/m^3 in 2022 (see **Table 25-10**), with, at most, four exceedances of the daily limit value of 50 µg/m^3 (35 exceedances are permitted per year). Sufficient data is available for all stations to observe trends over the period 2018–2022. Average annual mean PM_{10} concentrations ranged from 10–16 µg/m^3 over the period 2018–2022, suggesting an upper average concentration of 16 µg/m^3. Based on these results, a conservative estimate of the background PM_{10} concentration in the region of the CWP Project is 16 µg/m^3.

Table 25-10 Background PM_{10} concentrations n Zone A locations (µg/m^3)

Station	Averaging period	Year				
		2018	2019	2020	2021	2022
Ballyfermot	Annual mean PM_{10} (µg/m^3)	16	14	12	12	13
	24-hr mean > 50 µg/m^3 (days)	0	7	2	0	1
Dún Laoghaire	Annual mean PM_{10} (µg/m^3)	13	12	12	11	12
	24-hr mean > 50 µg/m^3 (days)	0	2	0	0	1
Finglas	Annual mean PM_{10} (µg/m^3)	11	13	12	12	12
	24-hr mean > 50 µg/m^3 (days)	1	2	0	0	1
Marino	Annual mean PM_{10} (µg/m^3)	12	14	13	12	14
	24-hr mean > 50 µg/m^3 (days)	0	4	0	0	3
Phoenix Park	Annual mean PM_{10} (µg/m^3)	15	12	10	10	11
	24-hr mean > 50 µg/m^3 (days)	1	3	0	0	0
St Anne's Park	Annual mean PM_{10} (µg/m^3)	11	12	11	11	13
	24-hr mean > 50 µg/m^3 (days)	0	1	0	0	1
Rathmines	Annual mean PM_{10} (µg/m^3)	15	15	11	12	15
	24-hr mean > 50 µg/m^3 (days)	2	9	2	0	4

$PM_{2.5}$

85. Continuous $PM_{2.5}$ monitoring carried out by the EPA (EPA, 2023) at the suburban and urban background locations of Ballyfermot, Finglas, Marino, Phoenix Park, St. Anne's Park and Rathmines showed annual mean concentrations ranging from 6.3–8.9 µg/m^3 in 2022 (see **Table 25-11**). Sufficient data is available for all stations to observe trends over the period 2018–2022. Average annual mean $PM_{2.5}$ concentrations ranged from 6–10 µg/m^3 over the period 2018–2022, suggesting an upper average concentration of 10 µg/m^3. Based on these results, a conservative estimate of the background $PM_{2.5}$ concentration in the region of the CWP Project is 10 µg/m^3.

Table 25-11 Background $PM_{2.5}$ concentrations in Zone A locations (µg/m^3)

Station	Averaging period	Year				
		2018	2019	2020	2021	2022
Ballyfermot	Annual mean $PM_{2.5}$ (µg/m^3)	7.0	10.0	8.0	7.8	7.5
Finglas	Annual mean $PM_{2.5}$ (µg/m^3)	8.0	9.0	7.0	7.5	7.3
Marino	Annual mean $PM_{2.5}$ (µg/m^3)	6.0	9.0	8.0	7.9	8.9
Phoenix Park	Annual mean $PM_{2.5}$ (µg/m^3)	6.0	8.0	7.0	6.4	6.3
St. Anne's Park	Annual mean $PM_{2.5}$ (µg/m^3)	7.0	8.0	7.0	6.9	7.8
Rathmines	Annual mean $PM_{2.5}$ (µg/m^3)	9.0	8.0	8.0	9.3	7.5

25.6.3 Predicted future baseline

86. The ambient air quality at the onshore development area will remain will change in accordance with trends within the wider area (including influences from new developments on the site and in the surrounding area, changes in road traffic, etc.).

87. Improvements in air quality can be expected in the future, due to the reduction in vehicle emissions driven by the 2023 Climate Action Plan (DECC, 2023), commitments to public transport developments and a 30% fleet share of electric vehicles. The 2023 Clean Air Strategy for Ireland commits Ireland to achieving final 2021 WHO Global Air Quality Guidelines by 2040, in line with the proposed EU revisions to the CAFE Directive. Future developments and existing industrial installations will need to comply with these more stringent future air quality standards, which will also result in improvements to air quality.

88. It is noted that the onshore development area falls within the lands subject to development by Dublin Port Company as part of their Masterplan programme. Additionally, the northern part of the Poolbeg Peninsula, on which the onshore substation is located, is zoned Employment (Heavy) – Zone Z7 in the Dublin City Development Plan 2022–2028. Furthermore, part of the landfall area falls into the Poolbeg West Strategic Development Zone (SDZ). On this basis, the onshore development area could see some development (and interaction with the fugitive dust and particulate matter emissions) in future years, subject to planning permission.

25.7 Scope of the assessment

89. An EIA Scoping Report for the OTI was published on 6 May 2021. The Scoping Report was uploaded to the CWP Project website and shared with regulators, prescribed bodies and other relevant consultees, inviting them to provide relevant information and to comment on the proposed approach being adopted by the Applicant in relation to the onshore elements of the EIA.

90. Responses to the EIA Scoping Report received relevant to air quality are given in **Section 25.2**. Through further refinement of the CWP Project design, and taking these consultation responses into account, potential impacts to air quality scoped into the assessment are listed below in **Table 25-12**.

Table 25-12 Potential impacts scoped into the assessment

Impact no.	Description of impact
Construction	
Impact 1	Impact of construction dust from demolition, earthworks, construction and trackout in terms of dust soiling, human health and ecosystems.
Operation and maintenance	
N/A	N/A
Decommissioning	
Impact 1	Dust soiling from decommissioning activities in terms of dust soiling, human health and ecosystems.

91. On refinement of the CWP Project design, potential impacts to air quality scoped out of the assessment are listed below in **Table 25-13**.

Table 25-13 Potential impacts scoped out of the assessment

Description of impact	Justification for scoping out
Air quality impacts due to construction road traffic emissions	Refer to **Section 25.4** for details
Air quality impacts due to offshore construction vessel movements	Refer to **Section 25.4** for details
Air quality impacts due to NRMM emissions	Refer to **Section 25.4** for details
Air quality impacts due to operations and maintenance phase emissions for the OTI	Refer to **Section 25.4** for details
Air quality impacts due offshore operational and maintenance vessel movements	Refer to **Section 25.4** for details
Air quality impacts due to decommissioning road traffic emissions on air quality	Refer to **Section 25.4** for details

25.8 Assessment parameters

25.8.1 Background

92. Complex, large-scale infrastructure projects with a terrestrial and marine interface such as the CWP Project, are consented and constructed over extended timeframes. The ability to adapt to changing supply chain, policy or environmental conditions and to make use of the best available information to feed into project design, promotes environmentally sound and sustainable development. This ultimately reduces project development costs and therefore electricity costs for consumers and reduces CO_2 emissions.

93. In this regard the approach to the design development of the CWP Project has sought to introduce flexibility where required, among other things, to enable the best available technology to be constructed and to respond to dynamic maritime conditions, whilst at the same time to specify project boundaries, project components and project parameters wherever possible, whilst having regard to known environmental constraints.

94. **Chapter 4 Project Description** describes the design approach that has been taken for each component of the CWP Project. Wherever possible the location and detailed parameters of the CWP Project components are identified and described in full within the EIAR. However, for the reasons outlined above, certain design decisions and installation methods will be confirmed post-consent, requiring a degree of flexibility in the planning consent.

95. Where necessary, flexibility is sought in terms of:

- Up to two options for certain permanent infrastructure details and layouts such as the wind turbine generator (WTG) layouts.
- Dimensional flexibility; described as a limited parameter range i.e. upper and lower values for a given detail such as cable length.
- Locational flexibility of permanent infrastructure; described as Limit of Deviation (LoD) from a specific point or alignment.

96. The CWP Project had to procure an opinion from An Bord Pleanála to confirm that it was appropriate that this application be made and determined before certain details of the development were confirmed. An Bord Pleanála issued that opinion on 25 March 2024 (as amended in May 2024) and it confirms that the CWP Project could make an application for permission before the details of certain permanent infrastructure described in Section 4.3 of **Chapter 4 Project Description** is confirmed.

97. In addition, the application for permission relies on the standard flexibility for the final choice of installation methods and O&M activities.

98. Notwithstanding the flexibility in design and methods, the EIAR identifies, describes and assesses all of the likely significant impacts of the CWP Project on the environment.

25.8.2 Options and dimensional flexibility

99. Where the application for permission seeks options or dimensional flexibility for infrastructure or installation methods, the impacts on the environment are assessed using a representative scenario approach. A “representative scenario” is a combination of options and dimensional flexibility that has been selected by the author of this EIAR chapter to represent all of the likely significant effects of the project on the environment. Sometimes, the author will have to consider several representative scenarios to ensure all impacts are identified, described and assessed.

100. For air quality, the infrastructure design and installation techniques with potential to give rise to air quality impacts have been confirmed in the planning application and consequently the assessment is confined to a single scenario for all construction and O&M phase impacts.

25.8.3 Limit of deviation (LoD)

101. Locational flexibility of permanent infrastructure is described as LoD from a specific point or alignment. The LoD is the furthest distance that a specified element of the CWP Project can be constructed.

102. LoD within the onshore development area (landward of the high water mark) are noted below in **Table 25-15**. This chapter assesses the specific preferred location for permanent infrastructure. However, the potential for the LoD to give rise to any new or materially different effects compared to those presented in **Section 25.4.4** of this chapter has been considered.

103. For air quality, a conclusion is provided in **Table 25-15**, which confirms that the LoDs for the permanent infrastructure relevant to air quality will not give rise to any new or materially different effects. The LoDs are therefore not considered further within this assessment.

Table 25-14 Design parameters relevant to assessment of air quality

Impact	Details	Value	Notes / assumptions
Construction			
Impact 1: Impact of construction dust from demolition, earthworks, construction and trackout in terms of dust soiling, human health and ecosystems.	Total estimated excavation volume (m^3)	91,357 m^3	This impact relates to impacts of dust soiling from construction activities related to open cut at landfall, tunnel, onshore substation and ESBN network cables, in terms of air quality on human health and ecosystems.
	Total area of the onshore development area (hectares (ha))	23.1 ha	
	Total approximate building volume of the onshore substation buildings	81,470 m^3	
Operations and maintenance			
Operational impacts scoped out.	n/a	n/a	n/a
Decommissioning			
Impact 1: Dust soiling from decommissioning activities in terms of dust soiling, human health and ecosystems.	It is recognised that legislation and industry best practice change over time. However, for the purposes of the EIA, at the end of the operational lifetime of the CWP Project, it is assumed that all OTI will be removed where practical to do so. In this regard, for the purposes of an assessment scenario for decommissioning impacts, the following assumptions have been made: • The TJBs and onshore export cables (including the cable ducting) shall be completely removed. • The landfall cable ducts and associated cables shall be completely removed. • The underground tunnel, within which the onshore export cables will be installed shall be left in situ and may be re-used for the same or another purpose. • The onshore substation buildings and electrical infrastructure shall be completely removed.		

Impact	Details	Value	Notes / assumptions
	• The reclaimed land, substation platform, perimeter structures and the new access bridge at the onshore substation site will remain in situ and may re-used for the same or another purpose. • The ESBN network cables (including the cable ducting) shall be completely removed. The general sequence for decommissioning is likely to include: • Dismantling and removal of electrical equipment; • Removal of ducting and cabling, where practical to do so; • Removal and demolition of buildings, fences, and services equipment; and • Reinstatement and landscaping works. Closer to the time of decommissioning, it may be decided that removal of certain infrastructure, such as the TJBs, landfall cable ducts and associated cables, onshore export cables and ESBN networks cables, would lead to a greater environmental impact than leaving the components in situ. In this case it may be preferable not to remove these components at the end of their operational life. In any case, the final requirements for decommissioning of the OTI, including landfall infrastructure, will be agreed at the time with the relevant statutory consultees. It is anticipated that for the purposes of an assessment scenario, the impacts will be no greater than those identified for the construction phase, with the exception of where demolition of the OTI infrastructure is required.		

Table 25-15 Limit of deviation (LoD) relevant to assessment of quality

Project component	Limit of deviation (LoD)	LoD impact summary
TJBs	0.5 m either side (i.e. east / west) of the preferred TJB location	No potential for new or materially different effects.
Landfall cable ducts	Defined LoD boundary (see **Chapter 4 Project Description**)	No potential for new or materially different effects.
Location of onshore substation revetment perimeter structure	Defined LoD for sheet piling at toe of the revetement	No potential for new or materially different effects.

25.9 Primary mitigation measures

104. Throughout the evolution of the CWP Project, measures have been adopted as part of the evolution of the project design and approach to construction, to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures are referred to as 'primary mitigation'. They are an inherent part of the CWP Project and are effectively 'built in' to the impact assessment.

105. Primary mitigation measures relevant to the assessment of climate are set out in **Table 25-16**. Where additional mitigation measures are proposed, these are detailed in the impact assessment (**Section 25.10.1**). Additional mitigation includes measures that are not incorporated into the design of the CWP Project and require further activity to secure the required outcome of avoiding or reducing impact significance.

Table 25-16 Primary mitigation measures

Project element	Description
Onshore substation site selection	The process of site selection and consideration of alternatives process for the CWP Project (see EIAR **Chapter 3 Site Selection and Consideration of Alternatives**) considered a number of alternative locations for the onshore substation site. The process evaluated alternative sites using a multi-criteria assessment, which included a consideration of likely environmental effects. The main reasons for selecting the preferred onshore substation site included its proximity to the grid connection point and within a heavily industrialised area. It is also located away from residential properties and areas of recreational amenity. The selection of the site is therefore considered a key driver for mitigation by avoidance.

25.10 Impact assessment

25.10.1 Construction phase

106. The potential environmental impacts arising from the construction of the CWP Project are listed in **Table 25-14** along with the parameters against which each construction phase impact has been assessed. A description of the potential effect on air quality receptors caused by each identified impact is given below.

Impact 1: Impact of construction dust from demolition, earthworks, construction and trackout in terms of dust soiling, human health and ecosystems.

107. The greatest potential impact on air quality during the construction phase of the OTI is from construction dust emissions and the potential for nuisance dust. Whilst construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data (see **Section 25.6**) indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature. In addition,

dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30-year average data for Dublin Airport indicates that on average 191 days per year have rainfall over 0.2 mm (Met Éireann, 2023) and therefore it can be determined that over 50% of the time dust generation will be suppressed.

Receptor sensitivity

108. This assessment has accounted for the planned residential development at the former Irish Glass Bottle Site, as a receptor, as residences have been assumed to be in place by 2026 (when construction is scheduled to commence).

109. On this basis, there are between 10–100 high-sensitivity residential receptors within 250 m and between 1–10 medium sensitivity commercial receptors within 20 m of the onshore development area. The sensitivity of the area to dust soiling is therefore **Medium**, as per **Table 25-6**.

110. The annual mean PM_{10} concentration in the region of the construction site is less than 24 µg/m^3, and there are between 10–100 high-sensitivity residential receptors within 250 m and between 1–10 medium sensitivity commercial receptors (Dublin Waste to Energy facility, Ecocem Ireland Plant, Dublin Bay Power Plant, Hammond Lane Metal Recycling and Alan Doyle – Car Mechanic) within 20 m of the onshore development area. The sensitivity of the area to human health impacts is therefore **Low**, as per **Table 25-7**.

111. The South Dublin Bay SAC and the South Dublin Bay and River Tolka Estuary SPA are within 20 m of the construction site boundary. The South Dublin Bay pNHA and the Dolphin, Dublin Docks pNHA are within 50 m of the onshore development area. These are high-sensitivity receptors, and therefore the sensitivity of the area to ecological impacts is **High**, as per **Table 25-8**.

Magnitude of impact

112. The IAQM Guidance does not provide a method for the evaluation of impacts on receptors from construction dust; rather it provides a means to determine the level of mitigation required to avoid significant effects on receptors.

113. In order to determine the level of dust mitigation required during the proposed works, the potential dust-emission magnitude for each dust-generating activity needs to be taken into account, in conjunction with the sensitivity of the area. The major dust-generating activities are divided into four types within the IAQM Guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

Demolition

114. There are no demolition activities associated with the OTI infrastructure. Therefore, there is no demolition impact predicted as a result of the works.

Earthworks

115. The onshore development area will be approximately 23.1 ha, with more than 10 heavy earth-moving vehicles active at any one time. Therefore, the dust-emission magnitude for the proposed earthwork activities can be classified as **Large**.

116. The sensitivity of the area, as determined in **Section 25.4.4**, is combined with the dust-emission magnitude for each dust-generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in **Table 25-9**, this results in an overall medium risk of short-term dust-soiling impacts, a low risk of short-term human health impacts and a high risk of ecological impacts as a result of the proposed earthworks activities.

Construction

117. The dust-emission magnitude for the proposed construction activities can be classified as **Large**, as the total building volume of the onshore substation buildings will be approximately 81,470 m^3. However, no activity with a high or medium potential to generate dust, such as on-site concrete batching or sandblasting, is proposed.

118. The sensitivity of the area, as determined in **Section 25.4.4**, is combined with the dust-emission magnitude for each dust-generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in **Table 25-9**, this results in an overall medium risk of short-term dust-soiling impacts, a low risk of short-term human health impacts and a high risk of ecological impacts as a result of the proposed construction activities.

Trackout

119. The dust-emission magnitude for the proposed trackout can be classified as **Large**, as at worst-case peak periods there will be more than 50 outward HDV movements per day.

120. The sensitivity of the area, as determined in **Section 25.4.4**, is combined with the dust-emission magnitude for each dust-generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in **Table 25-9**, this results in an overall medium risk of short-term dust-soiling impacts, a low risk of short-term human health impacts and a high risk of ecological impacts as a result of the proposed trackout activities.

Significance of the effect

121. The sensitivity of dust soiling, human health and ecological receptors in the study area is considered to be Medium, Low and High, respectively, and the magnitude of the dust impact risk ranges from Negligible to High risk, as per **Table 25-17**.

122. The risk of dust impacts as a result of the CWP Project are summarised in **Table 25-17** for each activity. The level of risk determined is used to prescribe the level of site specific mitigation required for each activity in order to prevent significant impacts occurring.

Table 25-17 Summary of dust impact risk used to define site-specific mitigation

Potential impact	Dust emission risk			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	n/a	Medium risk	Medium risk	Medium risk
Human health	n/a	Low risk	Low risk	Low risk
Ecological	n/a	High risk	High risk	High risk

123. Prior to mitigation, the dust related effects in terms of dust soiling, human health and ecology are considered to be direct, short-term, localised, **Slight** and negative, which is not significant in EIA terms.

Where flexibility in the proposed design exists, there is no other scenario which would lead to a more significant effect.

Additional mitigation

124. The implementation of additional dust control mitigation measures is recommended within the onshore development area as best practice and to reduce the potential for construction dust impacts as much as possible at nearby sensitive receptors. In order to ensure that no dust nuisance occurs, a series of measures will be implemented, drawing on best practice from the IAQM Guidance (IAQM, 2024). The proposed dust control measures are described in more detail below and also captured within the **Construction Environmental Management Plan (CEMP)**.

125. The mitigation measures have been divided into general measures applicable to the whole construction site and measures applicable specifically to earthworks, construction and trackout. As per the IAQM Guidance (IAQM, 2024), for those mitigation measures that are general the highest risk category has been applied.

Site management (dust control mitigation)

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

127. Good site management will include the ability to respond to adverse weather conditions by either restricting operations onsite or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2 mm/day, dust generation is generally suppressed (IAQM, 2024; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7 m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1997). Particular care should be taken during periods of high winds (gales) as this is when the potential for significant dust emissions is highest. The prevailing meteorological conditions (wind speed and rainfall, as described in **Section 25.6.1**) in the vicinity of the site are favourable, in general, for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur.

128. The dust minimisation measures shall be reviewed during the works, in tandem with the daily site inspections (recommended below), to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described in **Table 25-18** below.

Table 25-18 Dust mitigation measures

Type	Mitigation measure
Site management (dust control mitigation)	It is recommended that community engagement be undertaken before works commence on site, explaining the nature and duration of the works to local residents and businesses.
	A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary. This noticeboard should also include head / regional office contact details.

Type	Mitigation measure
	It is recommended that regular liaison meetings with other high-risk construction sites within 500 m of the site boundary be held, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport / deliveries which might be using the same strategic road network routes.
	The Principal Contractor or equivalent will monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised. It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein.
Monitoring (dust control mitigation)	At all times, the procedures put in place will be strictly monitored and assessed.
	During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions.
	Undertake weekly on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results and make the log available to the local authority when asked. This should include regular dust-soiling checks of surfaces such as any street furniture, cars and windowsills within 100 m of site boundary. If any issues are identified, additional mitigation measures will be developed in consultation with stakeholders.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Any additional monitoring requirements will be determined prior to construction, in consultation with DCC.
Preparing and maintaining site (dust control mitigation)	Plan site layout so that machinery and dust-causing activities are located away from receptors, as identified in **Section 25.4.2** and **Section 25.4.4**, as far as is possible.
	Erect screens or barriers (i.e., hoarding) around the site boundary or location of dusty activities (these include but are not limited to large excavations of dry material and movement of dusty material, such as dry sand or cement from stockpiles) that are at least as high as any stockpiles on site, if feasible.
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being reused on site. If they are being reused onsite, cover the materials.
	Cover, seed or fence stockpiles to prevent wind whipping, where practicable.
Operating vehicle / machinery (dust control mitigation)	Ensure all vehicles switch off engines when stationary – no idling vehicles, where most practicable and efficient.
	Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable.
	Impose and signpost a maximum speed limit of 30 kph on surfaced and 20 kph on unsurfaced haul roads and work areas.
	Produce a Construction Traffic Management Plan (**Appendix 27.2** of **EIAR Chapter 27 Traffic and Transport**) to manage the sustainable delivery of goods and materials.

Type	Mitigation measure
	A travel plan for construction workers will be implemented as part of the final Construction Traffic Management Plan (**Appendix 27.2** of **EIAR Chapter 27 Traffic and Transport**) and will support and encourage sustainable travel (public transport, cycling, walking and car sharing).
Operations (dust control mitigation)	Only use cutting, grinding or sawing equipment fitted with, or in conjunction with, suitable dust-suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the site for effective dust / particulate matter suppression / mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment, and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event, using wet cleaning methods.
Demolition (dust control mitigation) – applicable to decommissioning phase only	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
	Ensure effective water suppression is used during demolition operations. Hand-held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high-volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
	Bag and remove any biological debris or damp down such material before demolition.
	Re-vegetate earthworks and exposed areas / soil stockpiles to stabilise surfaces as soon as practicable. Use hessian, mulches or trackifiers where it is not possible to revegetate or cover with topsoil, as soon as practicable.
	Only remove the cover in small areas during work and not all at once.
Earthworks (dust control mitigation)	Re-vegetate earthworks and exposed areas / soil stockpiles to stabilise surfaces as soon as practicable.
	Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
	Only remove the cover in small areas during work and not all at once.
Construction (dust control mitigation)	Avoid scabbling (roughening of concrete surfaces) if possible.
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
	Ensure bulk cement and other fine powder materials, if used, are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
	For smaller supplies of fine power materials, ensure bags are sealed after use and stored appropriately to prevent dust.

Type	Mitigation measure
Trackout (dust control mitigation)	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent the escape of materials during transport.
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
	Record all inspections of haul routes and any subsequent action in a site logbook.
	Implement a wheel-washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
	Locate access gates at least 10 m from receptors where possible.

Residual effect

129. In accordance with the EPA Guidelines (EPA, 2022) and with the adoption of the additional mitigation measures, the significance of the residual effect, in terms of dust soiling, human health and ecology impacts from all construction activities assessed, is predicted to be direct, localised, negative, short-term and **Not Significant**, which is overall not significant in EIA terms.

25.10.2 Operation and maintenance (O&M) phase

130. The potential for O&M phase traffic was reviewed in line with the TII assessment criteria to determine whether a detailed air quality assessment of traffic emissions was required (refer to **Section 25.4** for further detail). The potential O&M phase traffic will not meet the screening criteria; therefore, a detailed air quality assessment of these traffic emissions was screened out.

131. Other activities during the operation of the OTI, such as BAU plant operation, periodic repairs and maintenance and emergency generator use, will also not generate any significant air emissions.

132. In accordance with the EPA Guidelines (EPA, 2022), it can be concluded that the above O&M phase emissions will have a long-term, direct, localised, negative and **Imperceptible** effect on air quality, which is not significant in EIA terms.

25.10.3 Decommissioning phase

Impact 1: Dust soiling from decommissioning activities in terms of dust soiling, human health and ecosystems.

133. Impacts during the decommissioning phase are expected to be of similar type and magnitude to those anticipated during the construction phase, but generally of a shorter duration, with the exception of the demolition of the OTI infrastructure. However, the same mitigation measures implemented during the construction phase will be applied during the decommissioning works and are also considered appropriate for the decommissioning demolition works. In accordance with the EPA Guidelines (EPA, 2022), the impact on air quality will be direct, localised, negative, short-term and **Not Significant**.

25.11 Cumulative impacts

134. A fundamental component of the EIA is to consider and assess the potential for cumulative effects of the CWP Project with other projects, plans and activities (hereafter referred to as 'other development').

135. According to the IAQM Guidance (2024), should the construction phase of the CWP Project coincide with the construction phase of any other development within 500 m of it then there is the potential for cumulative construction dust impacts to nearby sensitive receptors. A review of recent planning permissions for the area was conducted and it was found that there were 15 no. other developments for which cumulative impacts may occur should their construction phase and that of the CWP Project overlap. These developments are described in further detail in **Appendix 25.1 Cumulative Effects Assessment**.

136. There is the potential for cumulative construction dust impacts, should the construction phases overlap with that of the CWP Project. However, the dust mitigation measures outlined in **Section 25.9** will be applied throughout the construction phase of the CWP Project, which will avoid significant cumulative impacts on air quality. In accordance with the EPA Guidelines (EPA, 2022), and with appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the CWP Project are deemed short term, direct, localised, negative and **Slight**, which is not significant in EIA terms.

25.12 Transboundary impacts

137. There are no significant transboundary impacts with regard to air quality, as the onshore and offshore development area would not be sited in proximity to any international boundaries. Transboundary impacts were therefore scoped out of this assessment and were not considered further.

25.13 Inter-relationships

138. The inter-related effects assessment incorporates the findings of the individual assessment chapters to describe potential additional effects that may be of greater significance when compared to individual effects acting on a receptor group.

139. This includes an assessment of:

- **Phase effects** – Assessment of the scope for all relevant effects across multiple topics to interact, spatially and temporally, to create inter-related effects on a receptor group.

140. The term 'receptor group' is used to highlight the fact that the proposed approach to the inter-relationships assessment has assessed every individual receptor considered in this chapter, but instead focuses on groups of receptors that may be sensitive to inter-related effects.

141. The potential inter-related effects that could arise in relation to air quality are presented in **Table 25-19**. If there are additional effects, these are considered additively and qualitatively using expert judgement.

Table 25-19 Inter-related effects (phase) assessment for air quality

Impact / receptor	Related chapter	Phase assessment
Impact 1: Impact of dust soiling from construction activities in terms of dust	Chapter 21 Biodiversity	There is potential for impact on biodiversity from construction dust emissions during the construction phase. Mitigation measures during the construction phase of the OTI,

Impact / receptor	Related chapter	Phase assessment
soiling, human health and ecosystems.		presented in **Section 25.10**, will ensure that dust generation is minimised. As a result of these mitigations, the assessment predicts no significant effects to biodiversity. Therefore, it is not anticipated that any inter-related effects on biodiversity will be produced that are of greater significance than those already identified.
Impact 1: Impact of dust soiling from construction activities in terms of dust soiling, human health and ecosystems.	Chapter 7 Marine Water Quality	There is potential for impact on the water environment from construction dust emissions during the construction phase. Mitigation measures during the construction phase of the CWP Project, presented in **Section 25.10**, will ensure that dust generation is minimised and, as a result of these mitigations, the assessment predicts no significant effects to the water environment. Therefore, it is not anticipated that any inter-related effects to the water environment will be produced that are of greater significance than those already identified.
Impact 1: Impact of dust soiling from construction activities in terms of dust soiling, human health and ecosystems.	Chapter 29 Population	There is potential for impact on population and human health from construction dust emissions during the construction phase. Mitigation measures during the construction phase of the CWP Project, presented in **Section 25.10**, will ensure that dust generation is minimised and, as a result of these mitigations, the assessment predicts no significant effects to population and human health. Therefore, is not anticipated that any inter-related effects to population and human health will be produced that are of greater significance than those already identified.

25.14 Potential monitoring requirements

142. No monitoring is required in relation to air quality.

25.15 Impact assessment summary

143. This chapter of the EIAR has assessed the potential environmental impacts on air quality from the construction, O&M and decommissioning phases of the CWP Project. Additional mitigation has been considered and incorporated into the assessment.

144. This section, including **Table 25-20,** summarises the impact assessment undertaken and confirms the significance of any residual effects, following the application of additional mitigation.

145. The air quality assessment for the construction phase has addressed the effects from nuisance dust resulting from construction activities, in line with the IAQM Guidance (IAQM, 2024) and the effects on air quality receptors from an increase in traffic numbers associated with construction activities, in line with TII guidance PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects.

146. The construction dust assessment identified residential (planned residential development at the former Irish Glass Bottle Site), commercial and ecological receptors (South Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay pNHA and the Dolphin, Dublin Docks pNHA) and concluded the study area is of medium sensitivity to dust-soiling impacts, low sensitivity to human health impacts and high sensitivity to ecological impacts. A range of dust emission risks from negligible to high were identified from earthworks, construction and trackout activities, and these informed the selection of dust mitigation measures appropriate for high-risk dust emissions (**Section 25.10**). In accordance with the EPA Guidelines (EPA, 2022), and with the adoption of the additional mitigation measures, the significance of the residual effect is predicted to be **direct**, **localised**, **negative**, **short-term** and **not significant**, which is not significant in EIA terms.

147. The potential construction phase traffic will not meet the screening criteria; therefore, a detailed air quality assessment of these traffic emissions was screened out. In accordance with the EPA Guidelines (EPA, 2022), it can be concluded that construction phase traffic emissions will have a **short-term**, **direct**, **localised**, **neutral** and **not significant** impact on air quality, which is not significant in EIA terms.

148. The air quality assessment for the O&M phase has addressed the effects of vehicle emissions on air quality in line with TII guidance PE-ENV-01106. The potential O&M phase traffic will not meet the screening criteria; therefore, a detailed air quality assessment of these traffic emissions was screened out. Other activities during the operation of the OTI such as BAU plant operation, periodic repairs and maintenance and emergency generator use will also not generate any significant air emissions. In accordance with the EPA Guidelines (EPA, 2022), it can be concluded that operational and maintenance phase emissions will have a **long-term**, **direct**, **localised** and **neutral** impact on air quality, which is not significant in EIA terms.

149. The potential impacts on air quality during the decommissioning phase are expected to be of a similar or lesser magnitude to those identified during the construction phase and have been assessed as such, with the exception of the demolition of the OTI infrastructure, which is of larger volume than the demolition assessed during the construction phase. However, the same mitigation measures implemented during the construction phase will be applied during the decommissioning works and are also considered appropriate for the decommissioning demolition works. In accordance with the EPA Guidelines (EPA, 2022), the significance of the residual effect is therefore predicted to be **shortterm**, **direct**, **localised**, **negative** and **not significant**, which is not significant in EIA terms.

Table 25-20 Summary of potential impacts and residual effects

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional mitigation	Residual effect
Construction						
Impact 1: Impact of construction dust from earthworks, construction and trackout in terms of dust soiling, human health and ecosystems	Residential, commercial and ecological receptors	Medium, Low and High	Overall negligible to high risk of dust soiling, human health or ecological impacts from earthworks, construction and trackout), pre-mitigation	Direct, short-term, localised, **Slight** and negative (not significant)	Dust mitigation measures proposed in **Section 25.10**	Post-mitigation, the significance of the residual effect is direct, localised, negative, short-term and **Not Significant** (not significant).
Operation and maintenance						
Other activities during the operation of the OTI, such as BAU plant operation, periodic repairs and maintenance and emergency generator use, will also not generate any significant air emissions. In accordance with the EPA Guidelines (EPA, 2022), it can be concluded that operational and maintenance phase emissions will have a long-term, direct, localised, negative and imperceptible effect on air quality, which is not significant in EIA terms (not significant).						
Decommissioning						

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional mitigation	Residual effect
Impact 1: Dust soiling from decommissioning activities in terms of dust soiling, human health and ecosystems.	Potential impacts will be no greater to those identified during the construction phase and have been assessed as such, with the exception of the demolition of the OTI infrastructure. However, the same mitigation measures implemented during the construction phase will be applied during the decommissioning works and are also considered appropriate for the decommissioning demolition works. The significance of the residual effect is therefore predicted to be direct, localised, negative, short term and not significant, which is not significant in EIA terms (not significant).					

25.16 References

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155. Department of Environment, Climate and Communications (DECC) (2023) Climate Action Plan (CAP) 2023

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157. Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air

158. Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants

159. Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

160. Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants

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