Alexandra Basin Redevelopment 2

Bringing Dublin Port To 2040

Environmental Impact Assessment Report

Chapter 10 Air Quality

Volume 2



CALAFORT ÁTHA CLIATH
DUBLIN PORT

TETRA TECH

10 Air Quality

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10.1 Introduction

This Chapter of the Environmental Impact assessment Report (EIAR) comprises an appraisal of the existing air quality conditions within the ABR2 Project study area and addresses the potential effects of the Project on air quality. The assessment is based on the description of works as noted in **Chapter 5 Project Description**. Where potential adverse impacts are identified, the assessment identifies mitigation measures that will be implemented to prevent, reduce or offset potential adverse effects, or enhance potential beneficial effects where possible.

This chapter should be read in conjunction with

- Appendix 10-1 – Air Quality Survey Results;
- Appendix 10-2 – Detailed Dust Assessment;
- Appendix 10-3 – Air Quality Impacts on Designated Nature Conservation Sites; and
- Appendix 10-4 – Residential and Non-Residential Sensitive Receptor Distances.

10.1.1 Scope of the Assessment

The primary purpose of this EIAR chapter is to provide an assessment of the likely effects of the Project during the construction phase only. It considers air quality features within the Project and provides information on the key receptors that have the potential to be subject to likely significant effects and how that assessment is to be conducted.

It is considered highly unlikely that the operational phase of the ABR2 Project will have any impacts on local air quality due to the minimum number of vehicle trips (as outlined in **Chapter 15 Material Assets – Traffic and Transportation**) associated with the operation and maintenance of the ABR2 Project. Therefore, traffic operational impacts of the ABR2 Project on air quality have been scoped out for further assessment in this EIAR.

10.2 Assessment Methodology

This section describes the methodology which has been used in the assessment of air quality, which may impact or be impacted by the Project. The methodology and associated impact assessment had regard to the general guidance for the undertaking of an Environmental Impact assessment (EIA), as presented in **Chapter 1 Introduction**, as well as the Traffic Infrastructure Ireland (TII) Air Quality Assessment of Proposed National Roads – Standard, December 2022 (TII 2022; referred to hereafter as the TII Guidelines) and Institute of Air Quality Management in the UK (IAQM) guidance document ‘Guidance on the Assessment of Dust from Demolition and Construction’ (2024).

There are three potential impacts to atmosphere from the construction stage of the proposed project:

- Generation and dispersion of construction dusts during the proposed works (demolition, dredging and general construction);

Construction dust has the potential to cause local impacts through dust nuisance at the nearest sensitive receptors and also to sensitive ecosystems. The potential for dust generation from the construction activities associated with the ABR2 Project will be assessed on the basis of a review of the proposed methodologies and the proximity of these activities to sensitive receptors.

Construction activities such as stone importation, excavation, earth moving, dredging and backfilling may generate quantities of dust, particularly in dry weather conditions. 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.

- Plant emissions from diesel use on mobile and fixed plant engaged in the construction phase;

The proposed Project will involve the movement of materials and the reconfiguration of existing internal roadways, buildings, quays and lands. Additional infill material may be sourced off-site and transported to the Port as required. Dredged material will primarily be reused within the Project; however, up to approximately 60,085 m^3 of material may require export for recovery at appropriately licensed facilities should it not be possible to accommodate all material within the proposed works. Where recovery facilities are located within Ireland, material would be transported by HGV to licensed facilities within approximately 30 to 60 km of the site. In the unlikely event that recovery facilities are located overseas, material would be transported by vessel to suitably licensed facilities in Belgium or the Netherlands. An analysis of construction and export-related traffic will be undertaken in accordance with the TII Guidelines.

- Potential odours (such as during dredging);

The main potential odour from the construction stage relates to the potential for fugitive odours from the dredging operation, particularly hydrogen sulphide (H_2S), which can be particularly offensive. Despite the low risk of encountering odours, a series of odour mitigation measures have been presented to minimise the impact of this operation and to prevent any nuisance in the unlikely event that they are encountered.

10.2.1 Guidance and Legislation

To establish baseline conditions, the following key sources of information were referred to as part of the assessment on air quality:

- Ambient Air Quality Standards Regulations 2022 (S.I No. 739/2022);
- World Health Organisation Air Quality Guidelines 2021 (WHO, 2021);
- TII Air Quality Assessment of Proposed National Roads – Standard, December 2022;
- Clean Air for Europe (CAFE) Directive (2008/50/EC) (European Parliament, 2008); and
- Environmental Protection Agency (EPA) - Air Quality in Ireland 2024 (EPA, 2025).

10.2.1.1 Ambient Air Quality Standards Regulations 2022 (SI No. 739/2022)

To reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set (**Table 10-1**).

Air quality significance criteria are assessed based on compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Ambient Air Quality Standards Regulations 2022, which incorporate European Commission Directive 2008/50/EC, which has set limit values for the pollutants nitrogen dioxide (NO_2), and particulate matter (PM_{10} and $PM_{2.5}$) (**Table 10-1**). Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC). Provisions were also made for the inclusion of new ambient limit values relating to $PM_{2.5}$.

These limits, as specified in these Regulations, are presented in **Table 10-1** and represent the main assessment criteria for the construction phase of the Project. The 2022 Regulations specify limit values in ambient air for sulphur dioxide (SO_2), lead, benzene, particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x). These limits are mainly for the protection of human health and are largely based on review of epidemiological studies on the health impacts of these pollutants. In addition, there are limits that apply to the protection of the wider environment (ecosystems and vegetation). All predicted concentrations from the operation of the Project are compared to the air quality limits to determine the extent of any impact on human or ecological receptors. Particulate Matter, both PM_{10} and $PM_{2.5}$, are associated with the demolition and construction phase of the Project from exhaust emissions of vehicles and construction machinery.

Table 10-1: Air Quality Standards Regulations 2022 (based on EU Council Directive 2008/50/EC)

Pollutant	Regulation[1]	Limit Type	Value
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health – not to be exceeded more than 18 times/year	200µg/m^3
	2008/50/EC	Annual protection of human health	40µg/m^3
	2008/50/EC	Annual limit for protection of vegetation	30µg/m^3
Particulate Matter PM_{10}	2008/50/EC	Hourly limit for protection of human health – not to be exceeded more than 35 times/year	50µg/m^3
	2008/50/EC	Annual limit for protection of human health	40µg/m^3

[1] *EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC*

Pollutant	Regulation[1]	Limit Type	Value
Stage 1 - Particulate Matter $PM_{2.5}$	2008/50/EC	Annual target value for the protection of human health	25µg/m^3
Stage 2[2] - Particulate Matter $PM_{2.5}$	2008/50/EC	Annual target value for the protection of human health	20µg/m^3

10.2.1.2 World Health Organisation (WHO) Guidelines

10.2.1.2.1 Previous 2005 WHO Guidelines

In addition to the statutory limits for the protection of human health listed in SI No. 739/2022 Ambient Air Quality Standards Regulations 2022 (the "2022 Regulations"), the World Health Organisation (WHO) has published a set of air quality guidelines for the protection of human health.

The key publication is the "WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulphur dioxide, Global update 2005 Summary of risk assessment". The WHO guidelines are based on reducing the risk to human health and in some cases the levels differ from the EU statutory limits, as these limits are based on balancing health risks with technological feasibility, economic considerations, and various other political and social factors in the EU.

The 2005 WHO guidelines are presented in **Table 10-2** and illustrate that while the NO_2 levels are analogous to those in SI No. 739/2022 (excluding the tolerance levels for the 1-hour averages), the annual average PM_{10} and $PM_{2.5}$ levels specified by the WHO are half those specified in the legislation. The WHO note that these are the lowest levels at which total, cardiopulmonary and lung cancer mortality have been shown to increase with more than 95% confidence in response to long-term exposure to $PM_{2.5}$. The EPA has called for movement towards the adoption of these stricter WHO guidelines as the legal standards across Europe and in Ireland.

10.2.1.2.2 WHO Global Air Quality Guidelines September 2021

The WHO published revised air quality guidelines (AQGs) for pollutants in ambient air in September 2021. The new AQGs for particulate matter (PM) and NO_2 are substantially lower than the previous (2005) guidelines. In response to the publication of the AQGs. The updated long-term (annual average) AQG for PM_{10} is 15µg/m^3, for $PM_{2.5}$ is 5µg/m^3 and for NO_2 is 10µg/m^3. For PM, NO_2 and ozone (O_3), long-term AQGs were developed based on evidence from studies of spatial variation in long-term average concentrations of air pollutants.

[2] *Stage 2 indicative limit value for $PM_{2.5}$ to be applied from 1 January 2020 after review by the European Commission*

Table 10-2: Previous WHO 2005 Air Quality Guidelines

Pollutant	Criteria	Value
Nitrogen Dioxide (NO_2)	Hourly limit for protection of human health	200µg/m^3
	Annual protection of human health	40µg/m^3
Sulphur Dioxide (SO_2)	10-minute level for protection of human health	500µg/m^3
	Daily level for protection of human health	20µg/m^3
Particulate Matter (PM_{10})	24-hour level for protection of human health	50µg/m^3
	Annual level for protection of human health	20µg/m^3
Particulate Matter ($PM_{2.5}$)	24-hour level for protection of human health	25µg/m^3
	Annual level for protection of human health	10µg/m^3

Short-term (24-hour average) AQGs for PM, NO_2 and O_3, were derived from the long-term AQGs for these pollutants: as the 99th percentiles of daily concentrations observed in distributions with a mean equal to the long-term AQG. This is a different approach from that used for most of the previous (2005) short-term AQGs, which were based on a consideration of evidence of effects following short-term exposures, such as time-series studies or studies of controlled exposures. For sulphur dioxide (SO_2) and carbon monoxide (CO), for which long-term AQGs were not derived, short-term AQGs were developed which posed a similar level of risk to short-term AQGs recommended for the other pollutants. Previous (2005) AQGs for averaging times shorter than 24-hours were not covered by the 2021 update and remain valid.

10.2.1.3 TII Air Quality Assessment of Proposed National Roads – Standard, December 2022

The purpose of this TII Guidance is to be used on national road schemes[3] to assess the potential air quality impacts, as well as the following:

- To outline the application of Air Quality Assessment (AQA) during the planning of proposed national road schemes, motorway service areas, toll schemes, and any associated infrastructure;
- To apply AQA in a manner that is proportionate to the complexity, scale, and likely significance of air quality effects of a national road scheme, motorway service areas, toll scheme, and any associated infrastructure;
- Provide consistency to the consideration of AQA during the planning of a national road project as set out in TII's Project Management Guidelines (PMG) (TII, 2020a), Project Manager's Manual for Major National Roads (PMM) (TII, 2019) and Project Appraisal Guidelines (PAG) (TII, 2022).

The pollutants of most concern in relation to emissions from road traffic are NO_2 and particulate matter in the fractions of equal to or less than 10µm (PM_{10}) and equal to or less than 2.5µm ($PM_{2.5}$). In addition, the effects of ammonia and nitrogen oxides (NO_x) shall be considered with respect to the potential effects on sensitive

[3] Although this project is not a road scheme the TII guidance is still considered a useful guide in determining any notable changes in traffic volumes that would require assessment for ABR2 Project.

designated habitats. During the construction phase potential effects associated with dust due to construction phase traffic movement and laying of road surface will also need consideration.

10.2.2 Study Area

The Institute of Air Quality Management (IAQM) guidance document 'Guidance on the Assessment of Dust from Demolition and Construction' (2024) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts.

The IAQM methodology has been applied to the construction phase of the ABR2 Project in order to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. TII recommends the use of the IAQM guidance (2024) in the TII guidance document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a). The IAQM 'Guidance on the assessment of dust from demolition and construction' states that a dust assessment is typically required where there is:

- A 'human receptor' within:
  - 250 metres of the boundary of the site; or
  - 50 metres of the route(s) used by construction vehicles on the public highway, up to 250 metres from the site entrance(s).
- An 'ecological receptor' within:
  - 50 metres of the boundary of the site; or
  - 50 metres of the route(s) used by construction vehicles on the public highway, up to 250 metres from the site entrance(s).

To ensure a robust assessment and given the ecological sensitivities in the area, the zone of influence (ZoI) for the construction phase dust impacts is set at 250 metres from the study area boundary.



Figure 10-1: Air Quality Study Area

10.2.3 Baseline

The baseline environment relevant to this EIAR Chapter was informed by both a desktop study and site-specific surveys.

10.2.3.1 Desktop Study

Information on the baseline environment was collected through a desktop review of existing studies and datasets. The EPA in partnership with Local Authorities, public/semi state bodies and universities has established an air monitoring network. The network was completed in 2023 with 116 stations (107 operational at the end of 2022). The monitoring network provides real-time air quality results and generates public health advice for the area around local stations.

The sources used to inform the baseline environment are provided in **Table 10-3**.

Table 10-3: Summary of Key Desktop Data Sources for Air Quality

Data Title	Source/Author	Year
Air Quality in Ireland 2018	EPA	2019
Air Quality in Ireland 2019	EPA	2020
Air Quality in Ireland 2020	EPA	2021
Air quality in Ireland 2021	EPA	2022
National Ecosystems Monitoring Network	EPA	2022
Ireland's Air Pollutant Emissions 1990-2030	EPA	2022
Air quality in Ireland 2022	EPA	2023
Air quality in Ireland 2023	EPA	2024
Annual Air Quality Bulletin 2024	EPA	2025
Air Quality in Ireland 2024	EPA	2025
National Parks and Wildlife Service (NPWS) Designations Viewer	NPWS	2026

10.2.3.2 Site-specific Surveys

Alongside desktop studies, targeted baseline monitoring was carried out to establish local air quality levels and their spatial variation across the project area. Measurements of oxides of nitrogen (NO and NO_2, collectively 'NO_x') and aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylenes) were taken at multiple locations. These pollutants largely arise from traffic emissions and provide a spatial picture of background air quality.

Data from 22 monitoring stations in the Dublin Port area, collected across 12 monitoring events, were assessed against statutory limits and target values for human health and vegetation. In 2023, NO_2 and SO_2 were monitored at 22 sites over 12 events; PM_{10} and $PM_{2.5}$ were measured at two sites over two events; BTEX (benzene, toluene, ethylbenzene, xylene isomers) and ammonia were monitored at seven sites over four events; total depositional dust was sampled at four sites over two events; and lead was monitored at three sites over three events.

Historic monitoring from 2014 to 2022 recorded NO_2 and SO_2 at between seven and 22 stations. Between 2017 and 2022, BTEX and ammonia monitoring took place at seven stations. **Table 10-4** presents a summary of site-specific surveys undertaken.

Table 10-4: Summary of Site-Specific Surveys

Title & Summary	Source	Year Issued
Year 2023 High Level Summary Report – Air Quality Study in Dublin Port and Environs. Air quality measurements from 22 monitoring stations were collected across 12 monitoring events and compared with statutory limits and target values for human health and vegetation. NO_2 and SO_2 were measured at 22 sites over 12 events. PM_{10} and $PM_{2.5}$ were measured at two sites over two events. Benzene, toluene, ethylbenzene and xylene isomers (BTEX) plus ammonia were monitored at seven sites across four events. Total depositional dust was sampled at four sites over two events and lead at three sites over three events.	Odour Monitoring Ireland Ltd	February 2024
Year 2022 High Level Summary Report – Air Quality Study in Dublin Port and Environs. Data from 22 monitoring stations, gathered over 12 monitoring events, were assessed against legislative limits and target values for human health and vegetation. NO_2 and SO_2 monitoring took place at 22 locations over 12 events. PM_{10} and $PM_{2.5}$ monitoring occurred at two locations over two events. BTEX and ammonia were monitored at seven locations across four events. Total depositional dust was sampled at four locations over two events and lead at three locations across three events.	Odour Monitoring Ireland Ltd	April 2023
Year 2021 High Level Summary Report – Air Quality Study in Dublin Port and Environs. Air monitoring from 22 stations over nine monitoring events was evaluated against legislative standards and target values for health and vegetation. NO_2 and SO_2 were recorded at 22 locations over nine events. PM_{10} and $PM_{2.5}$ were measured at two locations over two events. BTEX and ammonia were monitored at seven locations across four events. Total depositional dust sampling was carried out at four locations over two events and lead at three locations over three events.	Odour Monitoring Ireland Ltd	May 2022
Year 2020 High Level Summary Report – Air Quality Study in Dublin Port and Environs. Measurements from 18 monitoring stations over six monitoring events were reviewed against applicable limits and target values for protection of human health and vegetation. NO_2 and SO_2 monitoring covered 18 locations over six events. PM_{10} and $PM_{2.5}$ were measured at two locations over two events. BTEX and ammonia monitoring took place at seven locations over three events. Total depositional dust was sampled at four locations over two events and lead at three locations over three events.	Odour Monitoring Ireland Ltd	March 2021
High Level Summary Report – Air Quality Study in Dublin Port and Environs. Air quality data from 18 monitoring stations collected over six monitoring events were compared with statutory limits and target values for human health and vegetation. NO_2 and SO_2 monitoring was carried out at 18 locations across six events. PM_{10} and $PM_{2.5}$ were measured at two locations over two events. BTEX and ammonia monitoring occurred at seven locations over three events. Total depositional dust was sampled at four locations over two events and lead at three locations across three events.	Odour Monitoring Ireland Ltd	February 2020
High Level Summary Report – Air Quality Study in Dublin Port and Environs. Results from 18 monitoring stations over four monitoring events were assessed against legislative limits and target values for human health and vegetation. NO_2 and SO_2 were measured at 18 sites over four events. PM_{10} and $PM_{2.5}$ monitoring was undertaken at two sites over one event. BTEX and ammonia were monitored at seven sites over two events. Total depositional dust sampling occurred at four sites during one event.	Odour Monitoring Ireland Ltd	June 2018
High Level Summary Report – Air Quality Study in Dublin Port and Environs. Air monitoring data from 18 stations collected over six monitoring events were evaluated against statutory limits and target values for human health and vegetation. Monitoring included NO_2, SO_2, PM_{10}, $PM_{2.5}$ and total depositional dust. The report notes a marked improvement in average NO_2 concentrations across the monitoring locations when compared with the results presented in the March 2016 Report.	Odour Monitoring Ireland Ltd	February 2017
High Level Summary Report – Air Quality Study in Dublin Port and Environs. Air quality measurements from 18 monitoring stations over six monitoring events were assessed against legislative limits and target values for protecting human health and vegetation. Monitoring covered NO_2, SO_2, PM_{10}, $PM_{2.5}$ and total depositional dust.	Odour Monitoring Ireland Ltd	March 2016

Appendix 10-1 presents a summary of the site-specific monitoring events.

10.2.4 Consultation

Following completion of the EIA Scoping Report, consultation was undertaken to obtain opinions regarding the Project and its potential and scope for significant effects. Specific comments relating to air quality are set out in **Table 10-5**, including where additional information in relation to issues can be found in the EIAR.

Table 10-5: ABR2 EIA Scoping Report Comments relating to Air Quality

Organisation	Comment Response/Issue Raised	Response
Dublin City Council	Dublin City Council strongly advise that the EIAR, including the various assessments and studies take account of the policies and objectives of the Dublin City Development Plan 2022-2028. In addition, it is advised that the "Guidelines on the information to be contained in Environmental Impact Assessment Reports" (May 2022) published by the Environmental Protection Agency (EPA) and Guidance on EIA Scoping, European Commission, 2017, be consulted and inform the preparation of the EIAR.	For development of this EIAR assessment on air quality both the Dublin City Development Plan 2022-2028 and Guidelines on the information to be contained in EIAR have been consulted in preparation.

10.2.5 Assessment Criteria and Assessment of Significance

Determining the significance of effects is a process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity for air quality are based on those set out in IAQM Guidance on the Assessment of Dust from Demolition and Construction, 2024.

10.2.5.1 Dust and Particulates

Dust is the generic term used to describe particulate matter in the size range 1-75µm in diameter. Particles greater than 75µm in diameter are termed grit rather than dust. Dusts can contain a wide range of particles of different sizes. The normal fate of suspended (i.e. airborne) dust is deposition. The rate of deposition depends largely on the size of the particle and its density; together these influence the aerodynamic and gravitational effects that determine the distance it travels and how long it stays suspended in the air before it settles out onto a surface. In addition, some particles may agglomerate to become fewer, larger particles; whilst others react chemically.

The effects of dust are linked to particle size and two main categories are usually considered:

- PM_{10} particles, those up to 10µm in diameter, remain suspended in the air for long periods and are small enough to be breathed in and so can potentially impact on health; and,
- Dust, generally considered to be particles larger than 10µm which fall out of the air quite quickly and can soil surfaces (e.g., a car, windowsill, laundry). Additionally, dust can potentially have adverse effects on vegetation and fauna at sensitive habitat sites.

The IAQM Guidance on the assessment of dust from demolition and construction sets out 250m as the distance from the site boundary and 50m from the site traffic route(s) up to 250m of the entrance, within which there could potentially be nuisance dust and PM_{10} effects on human receptors. For sensitive ecological receptors, the corresponding distances are 5m in both cases. These distances are set to be deliberately conservative.

10.2.5.1.1 Human Receptors Definition

A 'human receptor' refers to any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to particulates over a time period relevant to the air quality objectives. In terms of annoyance effects, this will most commonly relate to dwellings, but may also refer to other premises such as buildings housing cultural heritage collections (e.g. museums and galleries), vehicle showrooms, food manufacturers, electronics manufacturers, amenity areas and horticultural operations (e.g. salad or soft-fruit production). Please refer to **Appendix 10-2** for a detailed summary of the assessment criteria and significance for construction dust and particulates in relation to human receptors.

10.2.5.1.2 Ecological Receptor Definition

An 'ecological receptor' refers to any sensitive habitat affected by dust soiling. This includes the direct impacts on vegetation or aquatic ecosystems of dust deposition, and the indirect impacts on fauna (e.g. on foraging habitats). For locations with a statutory designation, e.g. Special Areas of Conservation (SACs) and Natural Heritage Areas (NHAs), consideration should be given as to whether the particular site is sensitive to dust and this will depend upon why it has been designated. Some non-statutory sites (i.e. local wildlife sites) and/or locations with very specific sensitivities may also be considered if appropriate. The inclusion or exclusion of sites should be justified in the assessment. Please refer to **Appendix 10-3** for a detailed summary of the assessment criteria and significance for construction dust and particulates in relation to ecological receptors.

10.2.5.2 Magnitude Criteria

Table 10-6 describes magnitude criteria that may be used in an EIAR to ensure a standardised approach. In this instance the construction phase assessment presented in this chapter employs standards and criteria set out in the IAQM guidance document (Guidance on the Assessment of Dust from Demolition and Construction, 2024).

Table 10-6: Definitions of Magnitude

Sensitivity	Example Descriptor
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse). Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse). Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse). Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

10.2.5.3 Sensitivity Criteria

Table 10-7 describes sensitivity of receptor and may be used in an EIAR to ensure a standardised approach. In this instance the construction phase assessment presented in this chapter employs standards and criteria set out in the IAQM guidance document (Guidance on the Assessment of Dust from Demolition and Construction, 2024).

Table 10-7: Definitions of Sensitivity or Value

Sensitivity	Example Descriptor
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

10.2.5.4 Significance of Effects

The significance of effects refers to the consequences of an impact. The significance of the effect upon air quality receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The final assessment of significance for each effect is based upon expert judgement of the peer-reviewed literature.

For the purposes of this assessment, any effects with a significance level of less than Minor have been concluded to be not significant in EIAR terms.

To describe the air quality effects of the proposed scheme at sensitive receptors, the following shall be considered in the Air Quality Assessment as defined in the EPA's Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022), including:

- Quality of Effects;
- Describing the Extent and Context of Effects;
- Describing the Probability of Effects;
- Describing the Duration and Frequency of Effects; and
- Describing the significance of Effects.

Factors to consider when determining the overall significance of the proposed scheme are detailed below, according to TII Guidelines:

- Number of people affected by increases and/or decreases in concentrations and a judgment on the overall balance;
- The number of people exposed to levels above the standard;
- Whether or not the exceedance of a standard is predicted to arise in the study area where none existed before, or if the size of an exceedance area is substantially increased;
- Whether or not the study area exceeds a standard and this exceedance is removed, or the size of the exceedance area is reduced;
- Uncertainty, including the extent to which worse-case assumptions have been made; and
- The extent to which a standard is exceeded, e.g., an annual mean NO_2 of 41µg/m^3 shall attract less weight in the determination of significance than an annual mean of 51µg/m^3.

The assessment of significance is based on the matrix illustrated in **Table 10-8**.

Table 10-8: Assessment of Significance Matrix

Sensitivity	Magnitude of Impact			
	Negligible	**Low**	**Medium**	**High**
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible or minor	Minor	Moderate	Moderate or major
High	Minor	Minor or moderate	Moderate or major	Major

- ***Major***: These beneficial or adverse effects are considered to be particularly important considerations and are likely to be material in the decision-making process.

- ***Moderate***: These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
- ***Minor***: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
- ***Negligible***: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

10.3 Baseline Environment

10.3.1 Primary Atmospheric Pollutants

The ABR2 Project site lies about 2km east of Dublin city centre, bounded to the south by the River Liffey, to the east by East Wall and the 3Arena, and to the north and east by industrial and commercial units along Alexandra Road.

The principal existing pollution sources around Dublin Port are road, rail and shipping traffic, space heating, industrial emissions and fugitive releases from fuel and gas storage. The local road network is focused on East Wall Road (R131), which links the East Link Toll Bridge to the Dublin Port Tunnel and forms the port's western boundary, which can be heavily trafficked, particularly at peak times. Within the port estate, internal roads such as Alexandra Road, Tolka Quay Road and Promenade Road primarily serve HGV movements. Irish Rail operates a diesel-fired line along Alexandra Road with several spurs, producing localised emissions.

Port operations also contribute combustion emissions from vessels (both docked and at sea) and from land-based plant and equipment such as cranes and trucks, vessel size and duration of activity. Two EPA-licensed facilities are located in Dublin Port: ESB North Wall Generating Station (IPPC Licence P0579-02), a 314MW gas-fired peaking plant that operates intermittently and vents via a single combustion stack and Indaver Waste Transfer Station (Waste Licence W0036-02), which handles hazardous waste export and contains a solvent-blending unit to produce fuel from waste but does not give rise to major atmospheric emissions.

Domestic and commercial space heating in the area uses gas, oil, biomass and non-bituminous coals, since the Dublin region is subject to a ban on smoky coal under the Air Pollution Act 1987 (Marketing, Sale and Distribution of Fuels) Regulations (1998–2011). As a result, emissions from space heating are not as elevated as they once were.

10.3.2 National Emissions

The EPA prepares annual reports on the national emissions to comply with the annual reporting requirements of the Convention on Long Range Transboundary Air Pollution (CLRTAP) and the National Emissions Ceiling

Directive (NECD). The 2025 report (Ireland's Air Pollutant Emissions 1990-2030, EPA, 2025[4]) has been referenced to establish the national baseline of these pollutants, which are summarised in **Table 10-9**.

Table 10-9: Ireland's National Emissions Reduction Commitment 2020 and 2030 Targets

Pollutant	Emissions (Kilotonnes)			2020-2029 and 2030 Reduction Commitments (% reduction compared with 2005 levels) based on latest inventory estimates	
	2023	2025	2030	2022-2029	2030
Total SO_2 With Existing Measures (WEM)	7.36	7.48	7.29	25.99	11.14
Total SO_2 With Additional Measures (WAM)	7.36	7.57	7.19	-65%	-85%
Total NOx WEM*	54.98	43.85	35.18	68.20	41.45
Total NOx WAM*	59.02	43.73	32.80	-49%	69%
Total NMVOC WEM*	63.59	66.87	74.17	57.63	52.2
Total NMVOC WAM*	63.59	66.85	73.07	-25%	-32%
Adjusted NMVOC WEM*	40.40	41..87	44.02	51.35	46.56
Adjusted NMVOC WAM*	40.40	41.85	42.92	-25%	-32%
Total NH_3 WEM	116.36	116.45	116.44	122.55	117.60
Total NH_3 WAM	116.36	110.10	111.05	-1%	-5%
Total $PM_{2.5}$ WEM	9.31	9.54	10.42	15.29	11.00
Total $PM_{2.5}$ WAM	9.31	9.53	10.01	-18%	-41%

The findings of the EPA's assessment of Ireland's air pollutant emissions reduction targets for 2020 and 2030 are set out in **Table 10-9.**

The key findings include the following;

- Ireland complied with the SO_2, NO_x, NH_3 and $PM_{2.5}$ emission ceilings for 2023 and is projected to remain that way; and
- Ireland exceeded its emission ceilings for NMVOC for 2023 and is predicted to do so until 2030.

Ireland's national emission reduction commitment for SO_2 under the NEC Directive requires a 65.0% reduction from 2005 levels by 2020 and an 85.0% reduction by 2030. Between 2005 and 2023, emissions have decreased by 90.1%, meaning Ireland remains compliant with the emission reduction targets set for 2020 to 2029, as shown below in **Figure 10-2**.

[4] Ireland's Air Pollutant Emissions

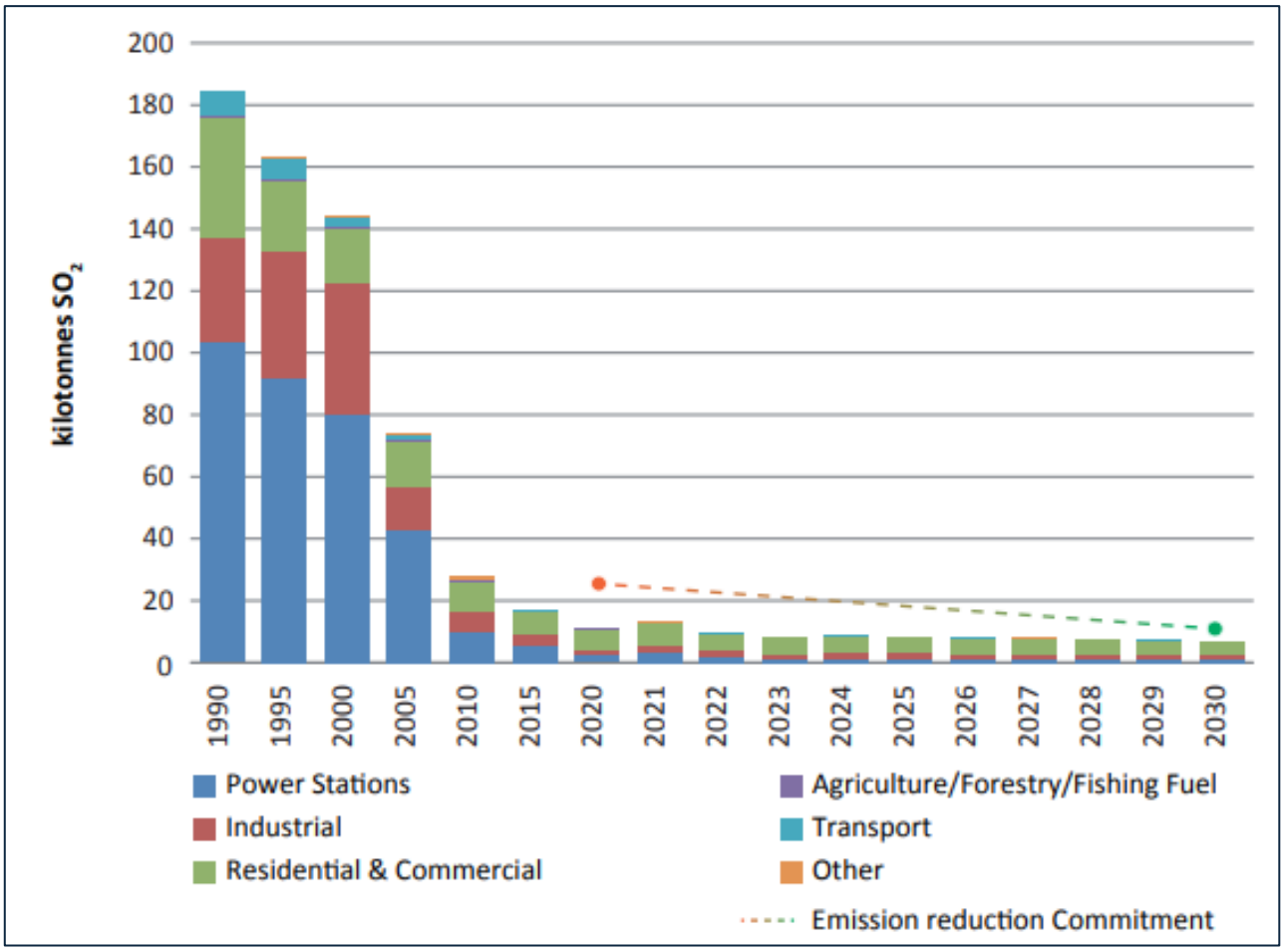


Figure 10-2: Trend in SO_2 emissions 1990-2030, with emission reduction Commitment (Source: Ireland's Air Pollutant Emissions 1990-2030 May 2025)

Ireland's national emission reduction commitment for NOx under the NECD required a 49% reduction from the 2005 baseline level by 2020. According to Article 4(3) of Directive (EU) 2016/2284, emissions from manure management and agricultural soils are excluded from compliance assessments. Based on this, emissions have decreased by 58.9% between 2005 and 2023, ensuring that Ireland remains compliant with the emission reduction commitment for 2020 to 2029, as shown below in **Figure 10-3**.

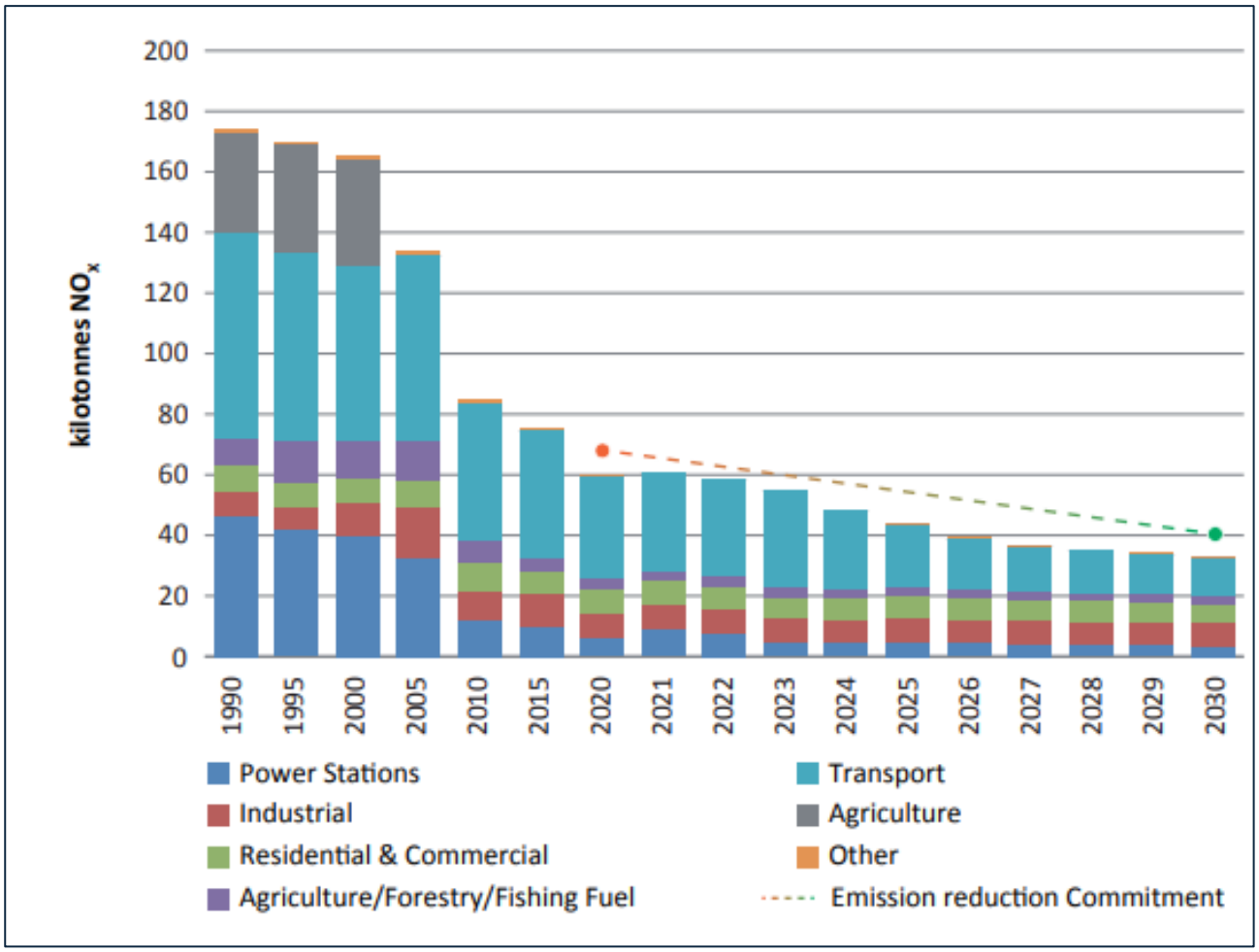


Figure 10-3: Trend in NO_x emissions 1990-2030, with emission reduction Commitment (Source: Ireland's Air Pollutant Emissions 1990-2030 May 2025)

Ireland's national emission reduction commitment for NMVOC under the NECD for 2020-2029 was a 25.0% reduction from 2005 levels. According to Article 4(3) of the NECD, emissions from manure management and agricultural soils are excluded from compliance assessments. Taking this into account, emissions have decreased by 17.2% between 2005 and 2023, meaning that Ireland is currently non-compliant with the emission reduction commitment for 2020-2029. This is shown in **Figure 10-4**.

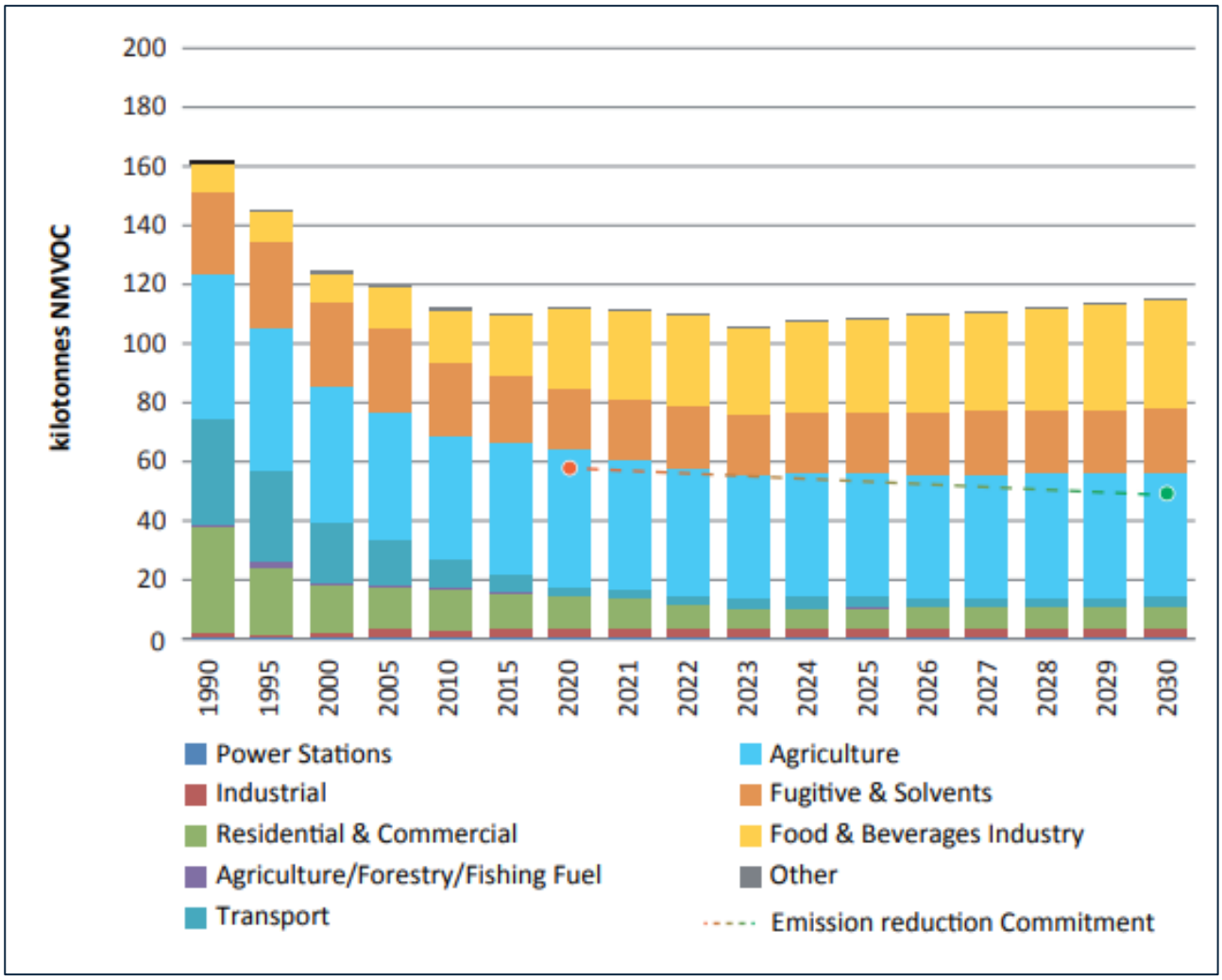


Figure 10-4: Trend in NMVOC emissions 1990-2030, with emission reduction Commitment (Source: Ireland's Air Pollutant Emissions 1990-2030 May 2025)

Ireland's national emission reduction commitment for $PM_{2.5}$ under the NECD for 2020-2029 was an 18.0% reduction from 2005 levels. Emissions have declined by 50.1% between 2005 and 2023, and thus Ireland remains compliant with the emission reduction commitment for the 2020-2029 period. This is shown in **Figure 10-5**.

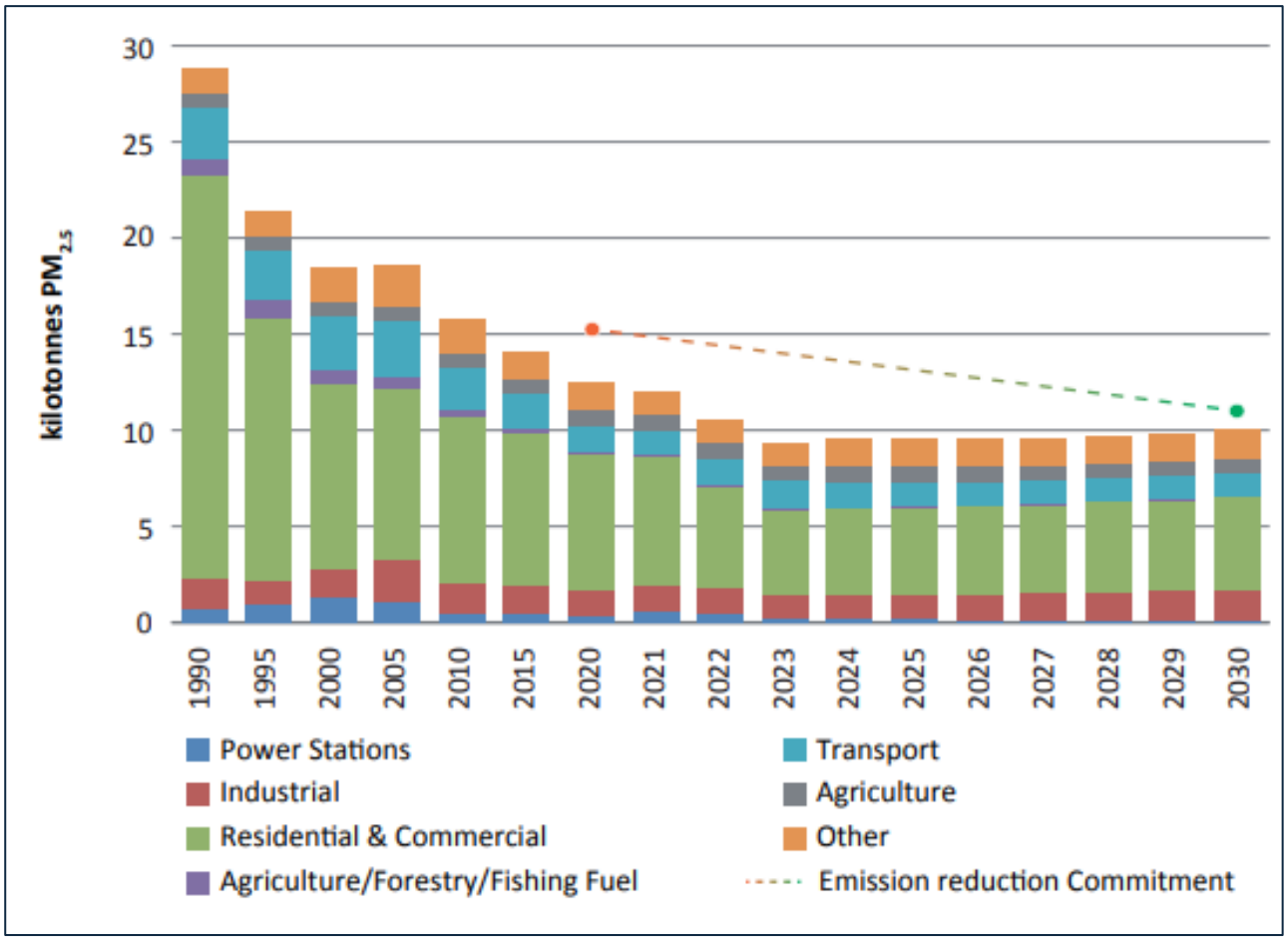


Figure 10-5: Trend in $PM_{2.5}$ emissions 1990-2030, with emission reduction commitment

10.3.3 Ambient Air Quality

Under the Clean Air for Europe Directive (2008/50/EC), EU member states must designate 'zones' for the purpose of managing air quality. For Ireland, four zones were defined in the Air Quality Standards Regulations (S. I. No. 180 of 2011), as amended. The zones were amended on 1 January 2013 to take account of population counts from the 2011 CSO Census and to align with the coal restricted areas in the 2012 Regulations (S.I. No. 326 of 2012). The four zones and the main areas in each zone are defined as:

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

The ABR2 Project falls within the EPA air quality Zone A, which covers Dublin Conurbation. These urban areas generally have the highest (i.e. worst) background air quality in Ireland, as these are large towns and cities where residential heating and traffic sources lead to increased pollution levels. The EPA monitors pollutant

levels for all pollutants listed in S.I. 180 of 2011, as amended, on a continuous basis at a series of monitoring stations around the country. Data has been compiled from the EPA database for Zone A to represent the urban background and to inform this assessment.

10.3.3.1 National Monitoring Data

The air quality in the area is best characterised by EPA Zone A data (Dublin Conurbation) and details of the most recent six years of EPA data published for the zone for each of the main traffic-based pollutants in the following sections. It is noted that the 2020 data presented relates to COVID-19 pandemic lockdowns and restricted movements when baseline patterns of transport and residential occupancy were altered, and as such, these 2020 baseline levels have been considered having regard to these limitations. **Figure 10-6** below illustrates the air quality monitoring stations.

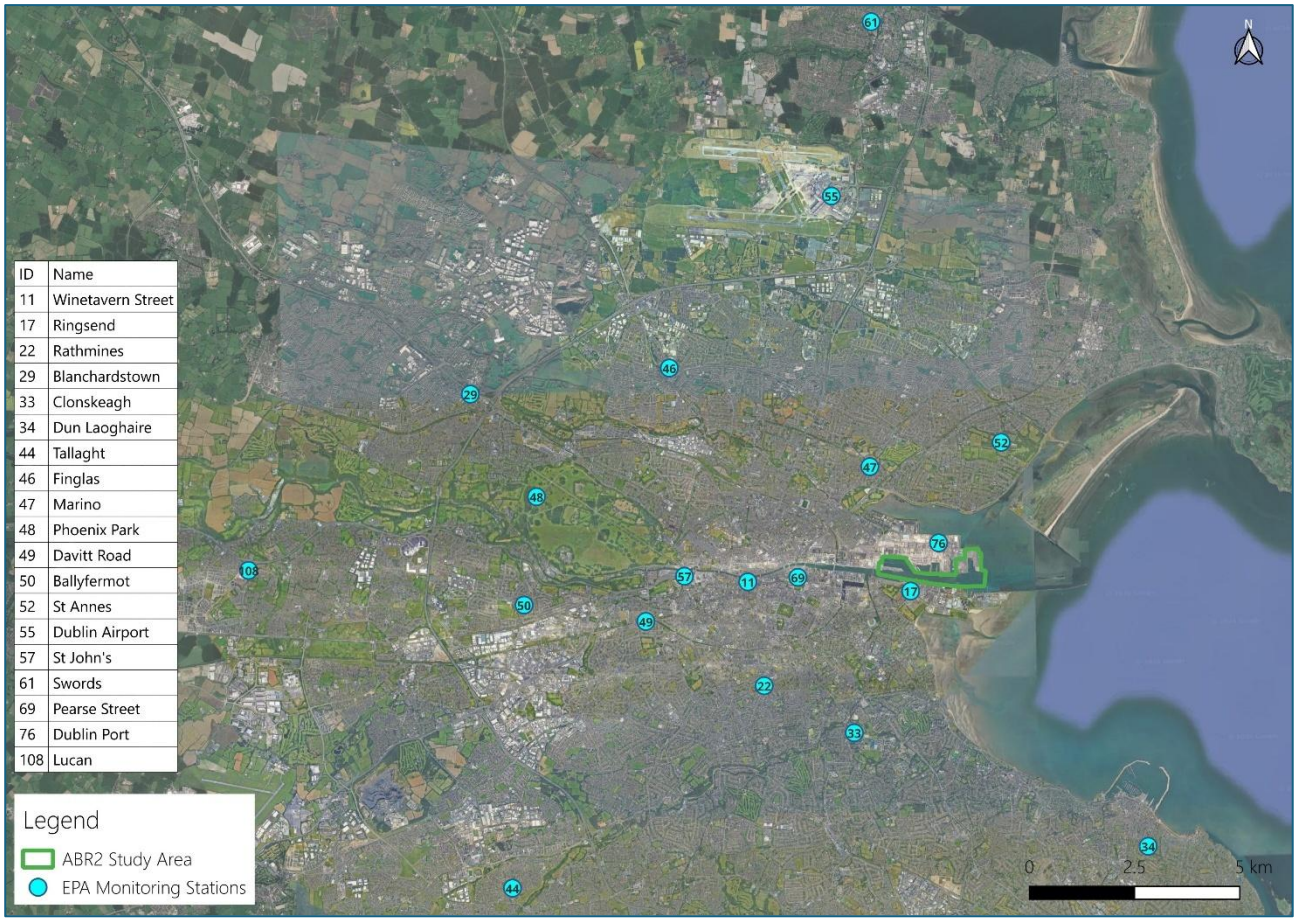


Figure 10-6: EPA Zone A Air Quality Monitoring Stations

The Dublin Port Station (76) is located on Tolka Quay Road, Dublin 1. It is operated by Dublin City Council. Monitoring is carried out using continuous monitors for particulate matter, nitrogen oxides and sulphur dioxide.

The continuous results recorded through 2026 at Dublin Port are presented below in **Figure 10-7.**

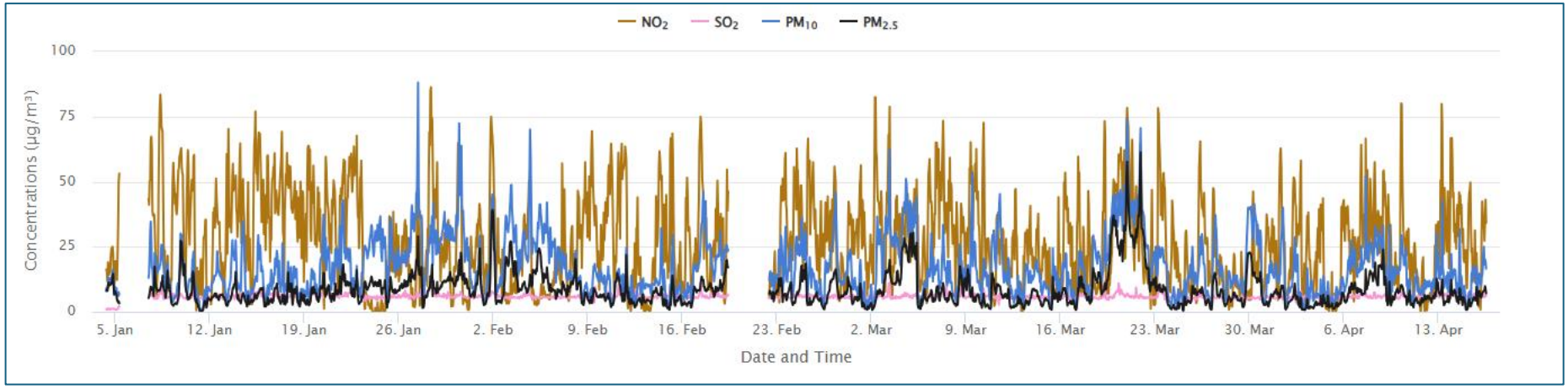


Figure 10-7: Air Quality Levels at Dublin Port (2026)

10.3.3.1.1 Nitrogen Dioxide

NO_2 is classed as both a primary and a secondary pollutant. As a primary pollutant, NO_2 is emitted from all combustion processes (such as a gas/oil-fired boiler or a car engine). The EPA report that in Ireland, the main source of NO_2 is from road transport. As a secondary pollutant, NO_2 is derived from atmospheric reactions of pollutants that are themselves derived mainly from traffic sources.

The levels of NO_2 and NO_x in Zone A for the period 2018 to 2024 are presented in **Table 10-10** and **Table 10-11**. The average results show that the existing baseline levels in Zone A are currently below the ambient air quality limit values. By extension, the levels of NO_2 in the vicinity of the proposed route are expected to be below these levels. This compliance level is to some extent a result of Ireland's location in western Europe, where there is a strong prevailing westerly wind, high rainfall levels and low sunshine levels that allow for the rapid dispersion of pollutants and generally good air quality.

Table 10-10: Results of NO_2 monitoring carried out by the EPA

Year	Zone A (Sites)													
	Winetavern St.	Davitt Rd.	Dublin Airport	St. Johns Rd.	Rathmines	Dun Laoghaire	Ballyfermot	Blanchardstown	Swords	Dublin Port	Pearse St.	Lucan	Tallght	Ringsend
	Annual Mean NO_2 ($\mu g/m^3$)													
2018	29	26	N/A	44	20	19	17	25	16	N/A	N/A	N/A	N/A	27
2019	28	24	N/A	43	22	15	20	31	15	N/A	49	N/A	N/A	24
2020	15	14	23	30	13	14	12	12	11	23	27	N/A	14	18
2021	18	15.2	19	33.2	14.4	15.5	13.2	30.6	11.4	26.9	36.1	N/A	12.6	19.2
2022	18.8	16.5	19.8	32.5	14.2	15.6	12.7	23.9	12.3	27.3	37.5	N/A	13.5	19.1
2023	19.3	17.3	20.5	32.1	14.8	13.4	13.4	25.4	10.3	23.1	38.8	20.6	13.8	19.2
2024	15.1	15.8	17.9	31.1	12.8	10.7	13.1	28.6	9.5	23.8	38.2	18.6	12.1	17.5
Limit	40 (Annual mean limit for the protection of human health)													

Source: *Air Quality in Ireland report 2024 (EPA,2025)*

Table 10-11:Results of NO_x monitoring carried out by the EPA

Year	Zone A (Sites)													
	Winetavern St.	Davitt Rd.	DAA	St. Johns Rd.	Rathmines	Dun Laoghaire	Ballyfermot	Blanchardstown	Swords	Dublin Port	Pearse St.	Lucan	Tallght	Ringsend
	Annual Mean NO_x ($\mu g/m^3$)													
2018	47	N/A	N/A	N/A	33	30	25	62	23	N/A	N/A	N/A	N/A	50
2019	45.8	46.1	N/A	121.9	34.3	26.6	28.1	69.9	20.9	N/A	161.4	N/A	N/A	45.0
2020	25.8	27.5	37.5	82.0	21.4	21.7	17.1	62.4	15.5	58	78.7	N/A	27.3	32.4
2021	26.9	27.1	25.1	84.2	20.1	22.7	17.7	75.6	15.4	59.2	79	N/A	23.3	33.6
2022	31.7	32.8	26.4	87.9	21.8	23.0	19.0	64.4	17.8	57.5	84.4	N/A	27.9	34.1
2023	35.0	32.5	28.9	85.1	23.6	26.3	122.9	65.9	14.9	45.6	87.9	54.3	29.1	32.5
2024	28.3	30.4	26.4	83.0	19.6	17.1	17.4	72.4	13.2	46.1	91.5	50.6	25.2	30.3
Limit	**40 (Annual mean limit for the protection of human health)**													

Source: *Air Quality in Ireland report 2024 (EPA,2025)*

10.3.3.1.2 Particulate Matter

Particulate Matter (PM_{10} and $PM_{2.5}$) may be emitted as a primary pollutant from road vehicle exhausts as well as from the combustion of solid fuels (coal, peat, wood) and the EPA report that the main source (especially of the smaller and more dangerous $PM_{2.5}$ particles) is solid fuel burning for home heating. In urban areas further sources are construction works, road surfaces and industrial emissions. PM may also be formed as secondary pollutants from the condensation or reaction of chemical vapours in the atmosphere.

The levels of PM_{10} and $PM_{2.5}$ in Zone A for the period 2018 to 2024 are presented in **Table 10-12** and **Table 10-13**. As with NOx, the average results for PM_{10} and $PM_{2.5}$ show the existing baseline levels based on data from the EPA monitoring network are currently below ambient air quality limit values in Zone A and by extension the levels in the vicinity of the proposed route are also considered to be below and in compliance with the human health limits presented in **Table 10-12** and **Table 10-13**. However, it is noted that the levels of PM_{10} are only marginally below the new WHO Guidelines in recent years and the levels of $PM_{2.5}$ are always above the WHO Guideline. As noted, the EPA record that the primary source of these emissions is from solid fuel burning for space heating and not from road traffic but road traffic (in particular diesel engines) is a source of fine particulate matter.

Table 10-12: Results of PM_{10} monitoring carried out by the EPA

Year	Zone A (Sites)																		
	Winetavern St.	Rathmines	Phoenix Park	Blanchardstown	Dun Laoghaire	Ballyfermot	Tallght	Ringsend	Pearse St.	St. Anne's Park	St. John's Rd	Dublin Airport	Davitt Rd.	Dublin Port	Finglas	Marino	Swords	Clonskeagh	Lucan
	Annual Mean PM_{10} ($\mu g/m^3$)																		
2018	15	15	11	17	13	16	15	20	N/A	11	14	N/A	14	N/A	11	12	N/A	N/A	N/A
2019	15	15	11	19	12	14	12	19	N/A	12	14	N/A	19	N/A	13	14	N/A	N/A	N/A
2020	13	11	10	15	12	12	10	17	N/A	11	13	13	15	20	12	13	N/A	N/A	N/A
2021	12.4	12.4	9.6	14.1	11.3	11.8	9.8	15.7	N/A	10.8	13	11.2	14	20	11.8	12.2	N/A	10.7	N/A
2022	13.6	14.7	10.9	15.1	12.3	12.6	11.1	15.9	16.1	12.9	14.6	11.7	13.4	18.1	11.7	13.6	N/A	11.3	12.7
2023	12.9	15.1	9.1	13.3	11.6	11.1	11.5	13.8	14.4	10.9	11.9	11.9	13.3	15.4	12.3	11.6	9.0	10.3	12.4
2024	11.6	13.1	9.5	12.8	11.8	11.5	10.4	15.5	14.5	10.5	13.2	12.2	16.8	14.8	12.4	12.2	10.2	11.4	13.0
Limit	**40 (annual Mean Limit for the protection of human health)**																		
WHO Air Quality Guideline (AQG)	**15**																		

Source: *Air Quality in Ireland report 2024 (EPA,2025)*

Table 10-13: Results of $PM_{2.5}$ monitoring carried out by the EPA

Year	Zone A (Sites)																	
	Rathmines	Phoenix Park	Blanchardstown	Dun Laoghaire	Ballyfermot	Tallaght	Ringsend	Pearse Street	St. Anne's Park	St. John's Rd	Dublin Airport	Davitt Rd	Dublin Port	Finglas	Marino	Swords****	Clonskeagh	Lucan
	Annual mean $PM_{2.5}$ ($\mu g/m^3$)																	
2018	9	6	N/A	N/A	7	N/A	8	N/A	7	9	N/A	8	N/A	8	6	N/A	N/A	N/A
2019	8	8	N/A	10	10	N/A	10	N/A	8	9	N/A	11	N/A	9	9	N/A	N/A	N/A
2020	8	7	7	8	8	7	8	8	7	7	6	9	9	7	8	N/A	N/A	N/A
2021	9.3	6.4	7.7	7.5	7.8	6.4	8.2	8.4	6.9	7.6	6.4	8.5	8.8	7.5	7.9	N/A	6.9	N/A
2022	7.5	6.3	7.8	7.8	7.5	6.2	7.7	7.8	7.8	8.1	6.7	8.6	8.3	7.3	8.9	N/A	7.0	9.9
2023	7.2	5.6	7.1	7.4	6.9	5.9	6.9	7.4	6.5	7.1	6.2	7.0	7.8	6.6	7.2	5.8	6.4	6.9
2024	7.6	7.5	7.3	7.5	7.3	6.2	7.1	7.9	6.4	7.8	6.6	7.8	7.4	7.0	7.6	6.4	7.2	7.3
Limit	**25 (Annual mean limit for the protection of human health)**																	
WHO Air Quality Guideline (AQG)	**5**																	

Source: *Air Quality in Ireland report 2024 (EPA,2025)*

10.3.3.1.3 Carbon Monoxide

Carbon monoxide (CO) is produced from the partial oxidation of carbon-containing compounds (i.e. organic fuels such as coal, oil, petrol, diesel, wood, etc.) during the combustion process. CO forms when there is not enough oxygen to produce carbon dioxide (CO_2) during combustion. As such, CO is a primary pollutant from all combustion process including vehicle exhausts, domestic heating, etc. The extent of CO emissions depends on the fuel type and the combustion conditions. Once inhaled, CO is quickly absorbed into the bloodstream from the lungs, then it combines with haemoglobin in the blood to form carboxyhaemoglobin. This reduces the ability of the blood to carry oxygen around the body, and it robs the heart, brain and other vital organs of oxygen with prolonged exposure causing tissue damage. The EPA undertook CO_2 monitoring in only one location (Winetavern Street) up until 2020 after which an additional monitoring site (DAA) was added the results of which are presented in **Table 10-14**. The levels of CO are significantly lower, i.e. less than 10% of the limit value of the WHO Guideline.

Table 10-14: Results of CO monitoring carried out by the EPA

Year (Site A)	Annual Mean CO (mg/m^3)	
2018 (Winetavern Street)	0.2	
2019 (Winetavern Street)	0.3	
2020 (Winetavern Street & DAA)	0.3	0.3
2021 (Winetavern Street & DAA)	0.4	0.3
2022 (Winetavern Street & DAA)	0.2	0.2
2023 (Winetavern Street & DAA)	0.1	0.2
2024 (Winetavern Street & DAA)	0.1	0.3
Limit	**10** **(Max daily 8-hr mean limit for the protection of human health)**	
WHO Air Quality Guideline (AQG)	**4** **(24 hour mean for the protection of human health)**	

Source: *Air Quality in Ireland report 2025 (EPA,2025)*

10.3.3.1.4 Volatile Organic Compounds

Volatile organic compounds (VOC) such as benzene are emitted directly from petrol-fuelled vehicles. Other VOCs are also emitted from petrol exhausts (toluene, ethylbenzene, xylenes). These compounds have varying sources and properties, and only benzene has a limit for the protection of human health in the legislation. EPA conduct VOCs monitoring within Zone A, specifically Rathmines, within results are presented in **Table 10-15**. Overall, benzene levels are low and are well below the limit for the protection of human health. Levels of the

other VOCs have also remained stable in past several years but there is no limit designated as the standard for the protection of human health.

Table 10-15: Results of VOC monitoring carried out by the EPA (Source: EPA)

Year	Annual Mean Benzene (µg/m^3)	Annual Mean Toluene (µg/m^3)	Annual Mean Ethylbenzene (µg/m^3)	Annual Mean m/p-Xylene (µg/m^3)	Annual Mean o-Xylene (µg/m^3)
2018	0.3	0.59	0.06	0.27	0.15
2019	0.26	0.53	0.05	0.23	0.32
2020	0.52	0.82	0.14	0.57	0.09
2021	0.35	0.72	0.11	0.37	0.09
2022	0.46	1.18	0.31	0.65	0.20
2023	0.6	1.1	0.4	0.8	0.7
2024	0.3	0.6	0.1	0.4	0.2
Limit	**5 (Annual mean limit for the protection of human health)**	***N/A***	***N/A***	***N/A***	***N/A***

Source: *Air Quality in Ireland report 2025 (EPA,2025)*

10.3.4 Human Sensitive Receptors

The TII Guidelines state that sensitive receptor locations include residential housing, schools, hospitals, places of worship, sports centres and shopping areas i.e. locations where members of the public are likely to be regularly present. The total receptors for the Project indicates that a total of 256 receptors within 250m of the Project (i.e. the zone of influence for the construction stage). The breakdown is summarised in below in **Table 10-16**, and illustrated in **Figure 10-8**. The distances from the Project to the mapped sensitive receptors is located within **Appendix 10-4**.

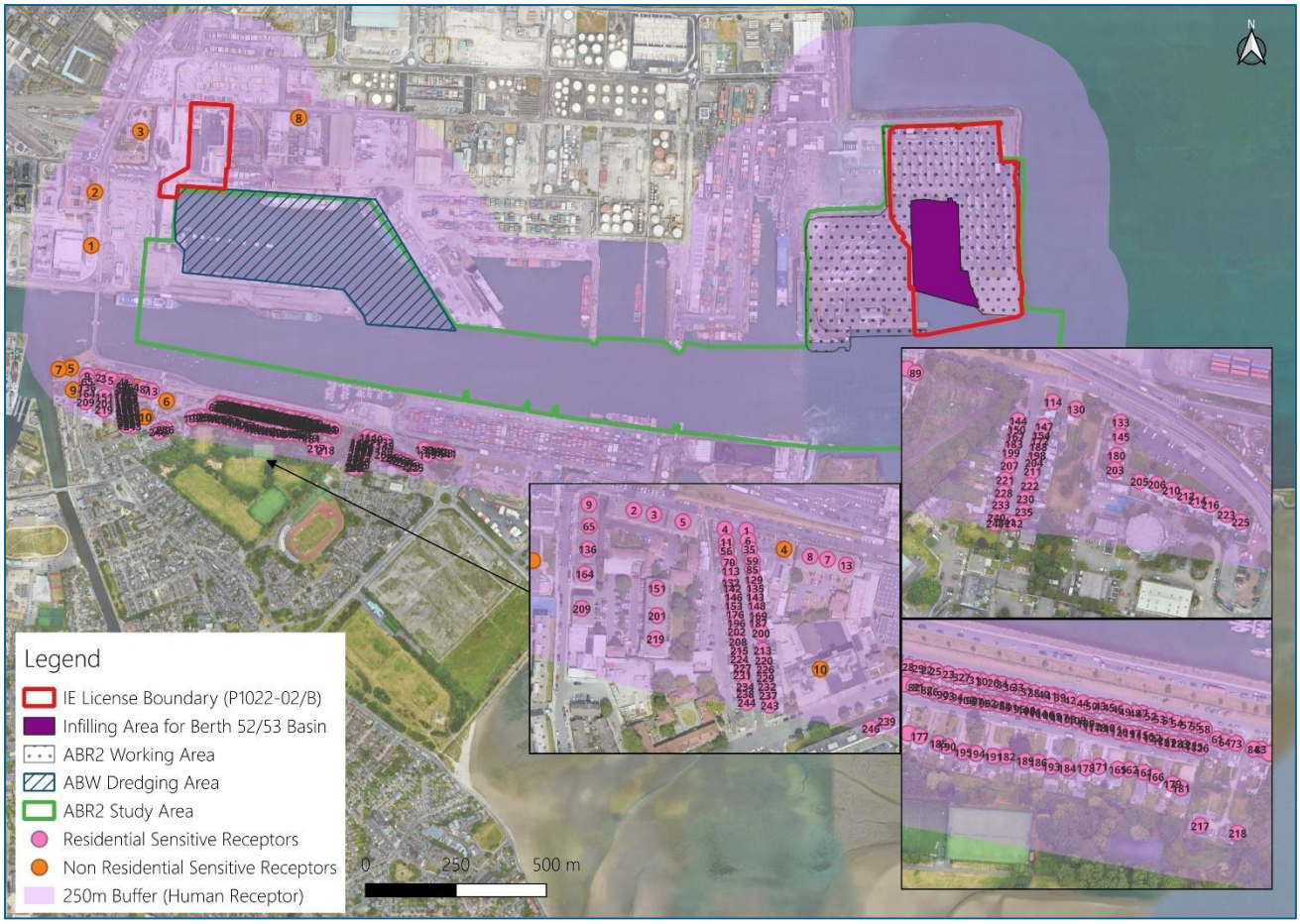


Figure 10-8: Residential and Non-Residential Sensitive Receptors

Table 10-16: Residential and Non Residential Sensitive Receptors

Buffer Band	All Properties	Residential
0 - 20m	0	0
20 -50m	0	0
50 - 100m	1	0
100 - 200m	211	203
200 - 25 m	44	43

10.3.5 Ecological Sensitive Receptors

The Project is located directly adjacent to South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) (site code 004024) and Dolphins, Dublin Docks (site code 000201) Proposed Natural Heritage Area (pNHA). The Project is hydrologically connected to various designations, including North Dublin Bay Special Area of Conservation (SAC) (site code 000206), South Dublin Bay SAC (site code 000210), Sandymount

Strand/Tolka Estuary Ramsar (ID 832), North Bull Island Ramsar (ID 406), North (site code 000206) & South (site code 000210) Dublin Bay pNHA.

- South Dublin Bay and River Tolka Estuary SPA (approximately 0m);
- Dolphins, Dublin Docks pNHA (approximately 0m);
- North Dublin Bay SAC (approximately 1.5km);
- South Dublin Bay SAC (approximately 500m);
- Sandymount Strand/Tolka Estuary Ramsar (approximately 1km);
- North Bull Island Ramsar (approximately 1.7km);
- North Dublin Bay pNHA (approximately 670m); and
- South Dublin Bay pNHA (approximately 465m).

Figure 10-9 below illustrates the above ecological designations within 2km of Study Area.

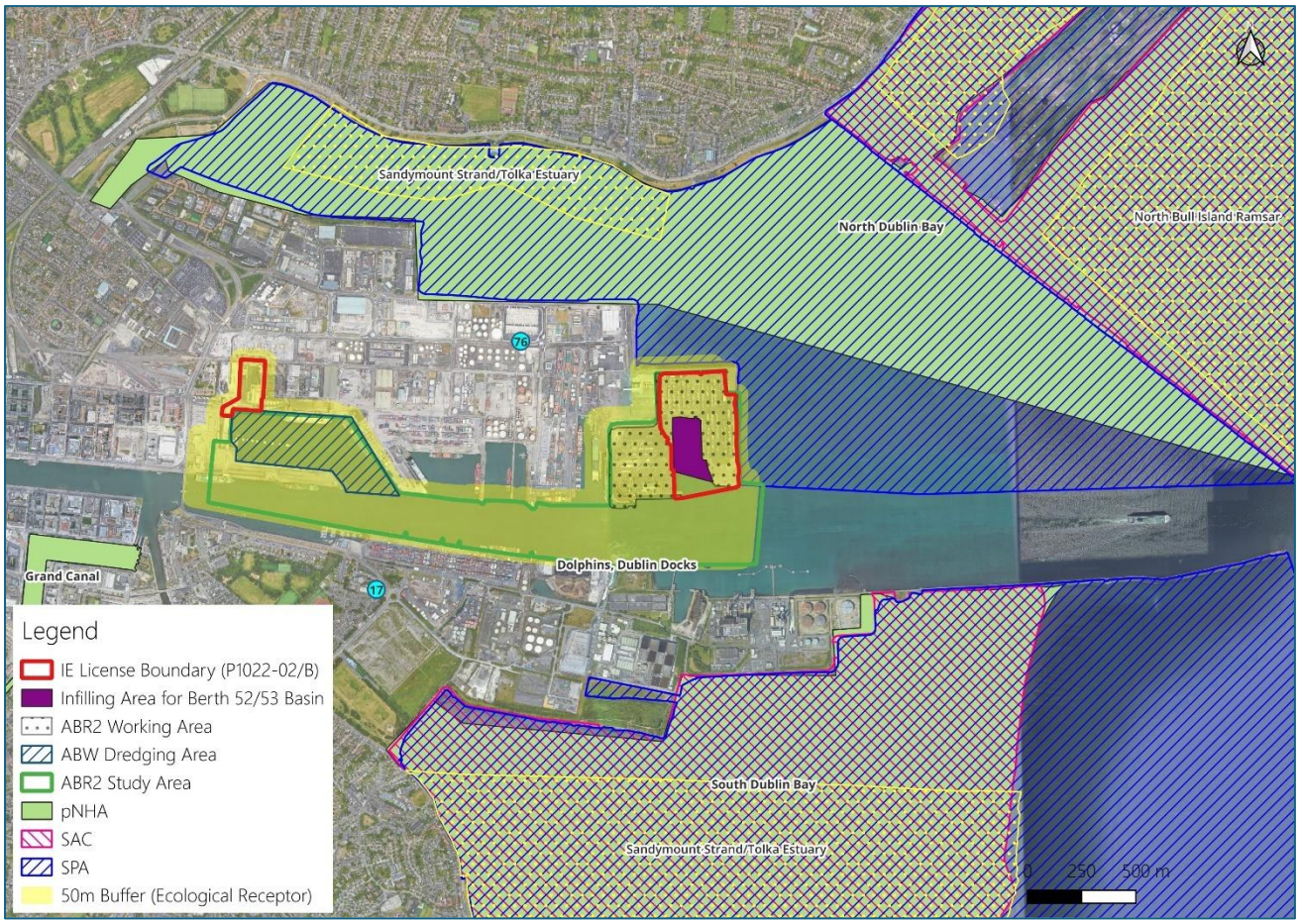


Figure 10-9: Ecological Designations within 2km of the ABR2 Project Study Area

10.3.6 Future Baseline Scenario

Dublin Port is Ireland's largest freight and passenger port, handling a significant portion of the country's international trade and playing a crucial role in the national and regional economies. Even in absence of the ABR2 Project and without mitigation, future air pollution in Dublin Port is likely to become more challenging as port expansion is expected to increase ship emissions. The research produced by EPA Source Apportionment of Air Pollution in the Dublin Port Area (PortAIR) in 2025 suggests that ship pollution will remain an important contributor to $PM_{2.5}$, NO_x and SO_2, especially during manoeuvring and while vessels are berthed. It also indicates that some pollution will continue to affect nearby parts of the city, so measures such as shore side electricity, cleaner fuels and tighter controls on ship emissions will be needed to limit future air quality impacts.

10.4 Description of Likely Significant Effects

10.4.1 Assessment of Construction Effects

The type of activities that could cause fugitive dust emissions are demolition; earthworks; handling and disposal of spoil; wind-blown particulate material from stockpiles; handling of loose construction materials; and movement vehicles, both on and off site. The level and distribution of construction dust emissions will vary according to factors such as the type of dust, duration and location of dust-generating activity, weather conditions and the effectiveness of suppression methods.

The main effect of any dust emission, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars, and laundry. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects, although short-term events may occur (for example, due to technical failure or exceptional weather conditions). The following assessment, using the IAQM methodology, predicts the risk of dust impacts and the level of mitigation that is required to control the residual effects to a level that is "not significant".

10.4.1.1 Dust Emission Magnitude

The IAQM guidance document (IAQM Guidance on the Assessment of Dust from Demolition and Construction, 2024) detailed dust assessment is presented in **Appendix 10-2**. The above detailed dust assessment was used to undertake the following assessment.

10.4.1.1.1 Demolition

Demolition works are proposed at the basin of Berths 52/53 which involves the removal of existing marine infrastructure, prior to infilling occurring which includes the open pile jetty at Berth 52 (c. area of 500m^2) and Ro-Ro Ramp No. 7 to be decommissioned.

In accordance with the IAQM guidance document, the Project magnitude is determined as:

Small for Demolition

10.4.1.1.2 Earthworks

Earthworks includes the completion of capital dredging through Phase 2 of dredging Alexandra Basin West, undertaken to a standard depth of -10m CD and infilling activities at the Berths 52/53 basin.

In accordance with the IAQM guidance document the Project magnitude is determined as:

Medium for Earthworks

10.4.1.1.3 Construction

Construction works include the provision of impermeable capping of infilled material, the installation of band drains into underlying sediments and of a processing and treatment facility/facilities located at North Wall Quay Extension (NWQE), Berth 49 or Berth 52 West.

In accordance with the IAQM guidance document the Project magnitude is determined as:

Medium for Construction

10.4.1.1.4 Trackout

It is anticipated that the Project will require >50 HGV's outward movements within one day to facilitate the construction phase.

In accordance with the IAQM guidance document the Project magnitude is determined as:

Large for Trackout

10.4.1.1.5 Summary of the Anticipated Works Magnitude

Table 10-17 below details a summary of the emission magnitude for earthworks, construction, and trackout.

Table 10-17: Dust Emission Magnitude for Earthworks, Construction, and Trackout.

Demolition	Earthworks	Construction	Trackout
Small	Medium	Medium	Large

10.4.1.2 Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- The specific sensitivities of receptors in the area;

- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

All dredging and construction activities are assumed to occur within the study area. As such, receptors at distances within 20m, 50m, 100m, 200m and 250m of the study area have been identified and are illustrated in **Figure 10-10**.



Figure 10-10: Construction Buffers

10.4.1.3 Sensitivities of People to Dust Soiling Effects

Table 10-18 has been used to determine the sensitivity of the area to dust soiling effects on people and property.

Table 10-18: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

As shown in **Figure 10-10**, there are 246 high sensitivity residential receptors between 100m to 250m of the Project.

As such,

- >100 high sensitivity receptors are located within 250m of the site boundary.

Therefore, following IAQM guidance, people and properties are considered **Low sensitivity** to dust soiling from the Project. Further details are available in **Appendix 10-2**.

10.4.1.4 Sensitivities of People to Health Effects of PM_{10}

Table 10-19 has been used to determine the sensitivity of the area to human health impacts.

Table 10-19: Sensitivity of the Area to Human Health Impacts (PM_{10})

Receptor Sensitivity*	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	**Low**

**Only concentrations for high-sensitivity receptors are presented, since the nearby residential receptors are high sensitivity.*

As shown in **Figure 10-10**, there are 246 high sensitivity residential receptors between 100m to 250m of the Project. The background PM_{10} concentrations at Dublin Port Monitoring Station for the assessment are <24µg/m³ (14.8µg/m³; see **Table 10-12**).

As such,

- >100 high sensitivity receptors are located within 250m of the site boundary and PM_{10} concentrations are less than 24µg/m³.

Therefore, following IAQM guidance, receptors are considered to have **Low sensitivity** to health effects from PM_{10}. Further details are available in **Appendix 10-2**.

10.4.1.5 Sensitivities of Receptors to Ecological Effects

Table 10-20 below has been used to determine the sensitivity of the area to ecological impacts.

Table 10-20: Sensitivity of the Area to Ecological Impacts

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

As shown in **Figure 10-9**, the South Dublin Bay and River Tolka Estuary SPA is on the boundary of the Project.

As such,

- An international or national designation within 20m of the site boundary.

Although Dolphins, Dublin Docks pNHA is also within the Project Study Area, it is not a statutory designated sites but is recognised for conservation importance.

Therefore, in line with IAQM guidance, the ecological impacts are considered to have **High sensitivity** to the Project. Further details are presented in **Appendix 10-3**.

10.4.1.6 Summary of Receptor Sensitivities

The sensitivity of receptors to dust soiling, human health (PM_{10}) and ecological impacts have been summarised for the Project below in **Table 10-21**.

Table 10-21: Sensitivity of Receptors to Dust Soiling, Human Health (PM_{10}) and Ecological Impacts.

Dust Soiling	Human Health (PM_{10})	Ecological
Low	**Low**	**High**

10.4.1.7 Risk of Dust Impacts

10.4.1.7.1 Dust Soiling and Human Health Impacts

Given that both dust soiling and human health receptors were determined to be Low sensitivity, their impacts will be combined into a single dust impact assessment. This assessment will evaluate risk across three

construction-phase activities; earthworks, construction and trackout and will determine the overall risk level and the mitigation measures required.

Demolition

The demolition assessment combines the activity magnitude (Small; see **Table 10-17**) with the receptor sensitivity for dust soiling and human health (Low; see **Table 10-21**).

Table 10-22 below summarises the IAQM guidance on demolition related dust risks.

Table 10-22: Risk of Dust Impacts- Demolition

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

In accordance with the IAQM guidance, the level of risk on dust soiling and human health from the Project earthworks is **Negligible**.

Earthworks

The earthworks assessment combines the activity magnitude (Medium; see **Table 10-17**) with the receptor sensitivity for dust soiling and human health (Low; see **Table 10-21**).

Table 10-23 below summarises the IAQM guidance on earthworks related dust risks.

Table 10-23: Risk of Dust Impacts- Earthworks

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

In accordance with the IAQM guidance, the level of risk on dust soiling and human health from the Project earthworks is **Low Risk**.

Construction

The construction assessment combines the activity magnitude (Medium; see **Table 10-17**) with the receptor sensitivity for dust soiling and human health (Low; see **Table 10-21**).

Table 10-24 below summarises the IAQM guidance on construction related dust risks.

Table 10-24: Risk of Dust Impacts- Construction

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

In accordance with the IAQM guidance, the level of risk on dust soiling and human health from the Project construction is **Low Risk**.

Trackout

The trackout assessment combines the activity magnitude (Large; see **Table 10-17**) with the receptor sensitivity for dust soiling and human health (Low; see **Table 10-21**).

Table 10-25 below summarises the IAQM guidance on trackout related dust risks.

Table 10-25: Risk of Dust Impacts- Trackout.

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

In accordance with the IAQM guidance, the level of risk on dust soiling and human health from the Project trackout is **Low Risk**.

10.4.1.7.2 Ecological Impacts

Ecological impacts were determined to be high risk (See **Table 10-21**) regarding dust impacts. This assessment will evaluate risk across three construction-phase activities; earthworks, construction and trackout and will determine the overall risk level and the mitigation measures required.

The nearest ecological designation is the South Dublin Bay and River Tolka Estuary SPA on the boundary of the Project. Due to the dredging nature of the Project to extract contaminated material, there is no anticipated significant impact on the South Dublin Bay and River Tolka Estuary SPA in regard to dust with appropriate mitigation measures applied.

Demolition

The demolition assessment combines the activity magnitude (Small; see **Table 10-17**) with the receptor sensitivity for ecological impacts (High; see **Table 10-21**).

Table 10-26 summarises the IAQM guidance on demolition related dust risks.

Table 10-26: Risk of Dust Impacts- Demolition.

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

In accordance with the IAQM guidance, the level of risk on ecological impacts from the Project earthworks are **Medium Risk**.

Earthworks

The earthworks assessment combines the activity magnitude (Medium; see **Table 10-17**) with the receptor sensitivity for ecological impacts (High; see **Table 10-21**).

Table 10-27 below summarises the IAQM guidance on earthworks related dust risks.

Table 10-27: Risk of Dust Impacts- Earthworks.

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

In accordance with the IAQM guidance, the level of risk on ecological impacts from the Project earthworks are **Medium Risk**.

Construction

The construction assessment combines the activity magnitude (Medium; see **Table 10-17**) with the receptor sensitivity for ecological impacts (High; see **Table 10-21**).

Table 10-28 below summarises the IAQM guidance on construction related dust risks.

Table 10-28: Risk of Dust Impacts- Construction.

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

In accordance with the IAQM guidance, the level of risk on ecological impacts from the Project construction are **Medium Risk**.

Trackout

The trackout assessment combines the activity magnitude (Small; see **Table 10-17**) with the receptor sensitivity for ecological impacts (High; see **Table 10-21**).

Table 10-29 summarises the IAQM guidance on trackout related dust risks.

Table 10-29: Risk of Dust Impacts- Trackout.

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

In accordance with the IAQM guidance, the level of risk on ecological impacts from the Project trackout are **High risk**.

10.4.1.8 Overall Dust Risk

The Dust Emission Magnitude has been considered in the context of the Sensitivity of the Area. **Table 10-30** below summarises the Dust Impact Risk for the three construction phase activities.

As advised by the IAQM guidance document for mitigation measures that are general, the highest risk category should be applied.

Table 10-30: Dust Impact Risk for Demolition Earthworks, Construction and Trackout.

Source	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Negligible	Low	Low	Low
Human Health	Negligible	Low	Low	Low
Ecological	Medium	Medium	Medium	High
Accumulative Risk	**Low Risk**	**Medium Risk**	**Medium Risk**	**Medium Risk**

It is important to note at the outset that one of the principal factors affecting dust generation and dust deposition relates to moisture content. Moisture increases the mass of a dust particle meaning particles are less friable and hence, less prone to dust dispersion. In most construction projects, the principal means of dust suppression is through maintaining a high moisture level on dust particles. In the case of the proposed works at Dublin Port, all dredged material will inherently have high moisture content and hence a lower risk of dust impact.

The proposed construction phase is a presented in **Chapter 5 Project Description** of this EIAR and includes details of the main tasks and durations. The dredging operations are considered very low risk for dust impacts given that this material will have very high moisture content (circa 50% by weight). This is also the case for the transport of this material. As such, these operations are considered to have negligible dust impacts and are not considered further in this assessment.

Provided this package of Mitigation Measure (**Section 10.6**) is implemented, the residual construction dust effects will not be significant. The IAQM dust guidance states that; *"For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'."* The IAQM dust guidance recommends that significance is only assigned to the effect after the activities are considered with mitigation in place.

10.4.1.9 Construction Traffic Emissions

The significance of impacts due to vehicle emissions during the construction phase will depend on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. It is predicted that the majority of construction traffic will use Promenade Road as the main arrival/departure route from Dublin Port and will use the Dublin Port Tunnel to access the wider road network.

As indicated within **Chapter 15 Material Assets – Traffic & Transportation**, the main approach routes are predicted to be Promenade Road (0.93% Impact), M50 off slip to Promenade Road (1.26% Impact), M50 on slip to Promenade Road (1.18% Impact). Therefore, the proposed construction traffic will have an insignificant impact upon the surrounding highway network, thus not having a significant effect on construction phase emissions.

10.4.1.10 Odour

There is a relatively low potential for odour generation and nuisance to occur during the construction phase. Hydrogen sulphide (H_2S) is one of the key odour compounds that can cause odour nuisance impacts. H_2S is a colourless, flammable, extremely hazardous gas with a "rotten egg" odour. It occurs naturally in crude petroleum and natural gas. In addition, H_2S is produced by bacterial breakdown of organic materials and may be released during dredging works if there is organic material disturbed. The potential exists where decayed organic material has the potential to release sulphurous compounds (such as H_2S) or where solvent contamination is uncovered. Both of these sources will potentially be released under water during the dredging operations. Low levels or organic solvents are predicted in the dredged material and any vapour released will quickly condense into the liquid phase and either dissolve in the water (such as water soluble solvents such as alcohols) or form a residue on the water surface where not water soluble (such as aromatics). In both cases the impact to air quality and climate is considered “negligible”.

10.4.2 Assessment of Operational Effects

The operational/maintenance phase of the Project has no anticipated potential for impacts on roads and public transport as all operation and maintenance activities will be within the site boundary. Any vehicles necessary to undertake monitoring and management activities will be limited and infrequent. There is no likelihood of significant air quality impacts from traffic and transportation during the operational phase.

10.5 Inter-relationships

All environmental factors are inter-related to some extent. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions may be influenced by the Project. An assessment of the interaction between environmental factors are required under Directive 2011/92/EU as amended by 2014/52/EU. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

a) Population and human health;
b) Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
c) Land, soil, water, air and climate;
d) Material assets, cultural heritage and the landscape;
e) The interaction between the factors referred to in points (a) to (d).

The interactions between impacts on different environmental factors will be considered, addressed and outlined as relevant throughout the EIAR.

Air Quality is most likely to have an inter relationship with the following chapters:

- **Chapter 7 Biodiversity, Flora and Fauna** – interaction between air quality and emission impacts upon designated sites. Ecological assessments are presented in **Chapter 7**.
- **Chapter 8 Land, Soils, Geology and Hydrogeology** – interaction between air quality and generation of particulate matter (PM_{10}, $PM_{2.5}$), dust deposition, and potential risks from contaminated land. Contaminated Land assessments are presented in **Chapter 8**.
- **Chapter 11 Climate** – interaction between air quality and greenhouse gas (GHG) emissions. A climate GHG assessment is presented in **Chapter 11**.
- **Chapter 15 Material Assets – Traffic and Transportation** – interaction between air quality and construction traffic emissions. A transport assessment is presented in **Chapter 15**.
- **Chapter 19 Population and Human Health** - interaction between air quality and the relationship where project related emissions are potentially translated into potential health outcomes for nearby communities. Further information is presented in **Chapter 19**.

10.6 Mitigation and Monitoring

10.6.1 Mitigation

10.6.1.1 Construction Phase

The 2024 IAQM Dust Guidance mitigation measures for the Project are detailed below:

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

Site Management

- Record all dust and air quality complaints, identify cause(s), respond appropriately to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- 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 re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.

- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste management

- Avoid bonfires and burning of waste materials.

Demolition

- Ensure effective water suppression is used during demolition operations. Handheld 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.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Earthworks

- Only remove the cover in small areas during work and not all at once.

Construction

- 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 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.

Trackout

- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

The IAQM dust guidance states that with the recommended dust mitigation measures in place residual effect will normally be *“not significant”,* and recommends the mitigation is secured by for example planning conditions, a legal obligation, or by legislation.

Overall, the key considerations are:

- Site roads/site entrances with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting will be utilised on-site as required to mitigate dust in dry weather conditions.
- The transport of road stone or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- Inspection of construction sites to examine dust measures and their effectiveness.

10.6.1.2 Operational Phase

There are no operational mitigation measures provided as there are no significant adverse impacts associated with the operational phase of the Project and emissions to air.

10.6.2 Monitoring

There is no proposed future monitoring planned as part of the Project in terms of air quality (including dust). Dust deposition monitoring is not considered necessary to inform the future baseline conditions.

10.7 Potential Cumulative Effects

Chapter 21 Cumulative Effects and Environmental Interactions outlines the methodology used to complete the assessment of cumulative effects, which may arise from adjacent or nearby development together with those predicted for the Project. The projects which have been considered within the assessment of cumulative effects are outlined in **Chapter 21 Cumulative Effects and Environmental Interactions**.

In accordance with IAQM 2024 guidance, only other proposed or permitted developments within 250m of the site have been considered which includes the following:

- 3FM – ABP Reg. Ref. PA29N.320250;
- MP2 Reg. Ref. ABP304888-19;
- The Liffey-Tolka Project - 1.4km pedestrian walkway and a 2-way cycle lane – Reg. Ref. 3220/21;
- T10 Link Road – Reg. Ref. 4894/22;
- Dublin Harbour Capital Dredging Project – Reg. Ref. Foreshore Application FS007164 / DAS Application S0033-01;
- Dublin Port Maintenance Dredging Programme 20222029 – Reg. Ref. FS007132 / DAS Permit S0004-03;
- North Lotts & Grand Canal Dock Planning Scheme 2014 – BP Ref. PL29N.ZD2011;

- Poolbeg West Strategic Development Zone (SDZ) – BP Ref. PL29N.ZD2013: Development for mixed usage, however only Reg. Ref. PWSDZ4341/23 is within 250m; and
- Seastacks Wind Farm - Reg. Ref. FS007134.

Should the construction phase of these cumulative projects coincide with the ARB2 Project, there is the potential for cumulative dust impacts to the nearby sensitive receptors.

The mitigation measures outlined in **Section 10.6.1** of this EIAR should be applied throughout the construction phase of the Project. In accordance with IAQM 2024, these mitigations are also applied for the other proposed or permitted developments. This will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the Project are deemed short-term and not significant.

If additional residential or commercial developments are proposed in the future in the vicinity of the Project, this has the potential to add further additional vehicles to the local road network. However, due to the existing port operations and as the traffic impact for the Project has an imperceptible impact on air quality, it is unlikely that other future developments of similar scale would give rise to a significant impact during the construction and operational stages of those projects.

Future projects of a large scale would need to conduct an EIA to ensure that no significant impacts on air quality will occur as a result of those developments.

10.8 Residual Impacts

In circumstances where the mitigation measures are fully implemented during the construction, as outlined in **Section 10.6**, the Residual Effects of the Project on the Air Quality are detailed below:

10.8.1 Construction Phase

When the dust minimisation measures detailed in the mitigation section of this chapter are implemented, fugitive emissions of dust from the site are not predicted to be significant and pose no nuisance, human health or ecological risk to nearby receptors. Thus, there will be no residual construction phase dust impacts. The assessment of construction phase traffic emissions has found negligible air quality impacts from traffic disruption caused by construction traffic. The construction phase of the assessment identifies a negligible impact on air quality in the vicinity of the proposed project. Therefore, overall, it is considered that the residual effects are overall short-term and not significant.

The residual odour impact of the prosed the dredging operations is considered “negligible”.

10.9 Summary of Effects and Conclusions

In relation to air quality, for the construction phase, an important consideration is dust. In the absence of mitigation there is the potential for significant, negative, short-term impacts to nearby sensitive receptors as a result of dust emissions from the Project. The mitigation measures provided within this assessment will ensure that the risk of adverse dust effects is reduced to a level categorised as “negligible”. Another important issue

during the construction phase is construction traffic but due to the nature and scale of the project the construction traffic volumes will not be significant and the resultant air quality impact from construction traffic is “negligible”.

Pollutant concentrations are predicted to be within the relevant health-based air quality objectives. Therefore, air quality is acceptable at the receptors surrounding the development site, making it suitable for its proposed uses. The operational impact of the Project on existing receptors is predicted to be “negligible” taking into account the changes in pollutant concentrations and absolute levels. Using the significance criteria adopted for this assessment together with professional judgement, the operational air quality effects are considered to be “not significant” overall.

A summary of the impact assessment is provided in **Table 10-31**.

Table 10-31: Summary of Effects relating to Air Quality

Potential Effect and Receptor	Phase[5]		Magnitude of Effects	Sensitivity of Receptor	Significance of Effect	Significant/Not Significant	Mitigation Measures	Residual Effects
	C	O						
Dust Soiling	✓		C: Medium	C: Low	C: Moderate	C: with mitigation "**not significant**"	Dust management mitigations as detailed above in **Section 10.6.1.1**	None
Human Health	✓		C: Medium	C: Low	C: Moderate	C: with mitigation "**not significant**"	Dust management mitigations as detailed above in **Section 10.6.1.1**	None
Ecological	✓		C: Medium	C: High	C: Moderate	C: with mitigation "**not significant**"	Dust management mitigations as detailed above in **Section 10.6.1.1**	None
Odour	✓		C: Low	C: Negligible	C: Minor	C: Not Significant	None	None

[5] C: Construction Phase; O: Operational Phase

10.10 Limitations of Assessment

This Chapter of the EIAR has been based upon the best available information and prepared in accordance with current best practice and relevant guidelines. There were no technical difficulties or otherwise encountered in the preparation of this chapter of the EIAR.