8.0 AIR QUALITY AND CLIMATE

8.1 INTRODUCTION

This chapter of the EIAR has been prepared by Byrne Environmental Consulting Ltd to identify and assess the potential air quality and climatic impacts that a proposed development at City Quay may have on the receiving environment during the construction and operational phases of the project. The assessment includes a comprehensive description of the existing air quality and climate at the subject site; a description and assessment of how the construction phase and the operational phase of the development may impact air quality and climate and the mitigation measures that will be implemented to control and minimise the impact that the development may have on air quality and climate.

8.1.1 Statement of Authority

Ian Byrne MSc. Environmental Protection, Dip Environmental & Planning Law, Member of the Institute of Acoustics, is the Principal Environmental Consultant of Byrne Environmental Consulting Ltd and prepared all aspects of this EIAR Chapter. Ian Byrne has 26 years of experience in the monitoring and assessment of air quality and climatic impacts that residential, commercial and industrial developments may have on the receiving environment.

8.2 STUDY METHODOLOGY

The assessment methodology of the potential impact of the proposed development on air quality and climate has been conducted in accordance with the following guidance:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Advice Note on Preparing Environmental Impact Statements – Draft (EPA, 2015);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022)

8.2.1 Air Quality

- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management 2024)
- Air Quality Regulations 2022
- Air Quality Framework Directive 96/62/EC
- Council Directive 2008/50/EC
- CAFÉ Directive EU 2008/50/EC
- Government of Ireland Clean Air Strategy for Ireland, April 2023

8.2.2 Climate

Climate Change Risk Assessment (CCRA) identifies the impact of a changing climate on a development and on the receiving environment. The assessment considers a projects vulnerability to climate change.

Greenhouse Gas Emissions Assessment (GHGA) identifies the GHG emissions associated with a development over the extent of its lifetime.

The assessment of the impact of the development on climatic factors is considered in relation to greenhouse gas emissions and climate change.

- Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021) (Government of Ireland, 2021);

- Climate Action Plan 2024 (Government of Ireland, 2023);
- Dublin City Climate Action Plan 2024-2029 (Feb 2024).
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- 2030 Climate and Energy Policy Framework (European Commission, 2014);
- 2030 EU Climate Target Plan (European Commission, 2021b);
- Assessing Greenhouse Gas Emissions and Evaluating their Significance (Institute of Environmental Management & Assessment (IEMA), 2022);
- IEMA Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate (UK Highways Agency, 2019); and
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

8.2.3 Air Quality Assessment

A review of the most applicable standards and guidelines has been undertaken in order to define the air quality significance criteria for the Construction and Operational Phases of the proposed development. Predictive calculations and impact assessments relating to the likely Construction Phase air quality impacts have been undertaken at the nearest sensitive locations to the construction activities. Predictive calculations have been performed to assess the potential air quality impacts associated with traffic alterations associated with the operational phase at the most sensitive locations; and a schedule of mitigation measures has been incorporated where required, to reduce, where necessary, the identified potential air quality impacts associated with the proposed development.

Air quality standards and guidelines are available from a number of sources. The guidelines and standards referenced in this report include those from Ireland and the European Union.

In order to reduce the risk to health due to 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 values, as defined in Table 7.1.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are the national Air Quality Standards Regulations 2022 (S.I No. 739 of 2022) which incorporate the ambient air quality limits set out in Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (CAFÉ Directive).

EU legislation on air quality requires that Member States divide their territory into zones for the assessment and management of air quality. The zones in place in Ireland are as follows:

- Zone A is the Dublin conurbation;
- Zone B is the Cork conurbation;
- Zone C comprises the 23 large towns in Ireland with a population >15,000; and
- Zone D is the remaining area of Ireland.

The air quality in each zone is assessed and classified with respect to upper and lower assessment thresholds, based on measurements over the previous five years. Upper and lower assessment thresholds are prescribed in the legislation for each pollutant. The number of monitoring locations required is dependent on population size and

whether ambient air quality concentrations (i) exceed the upper assessment threshold, (ii) are between the upper and lower assessment thresholds, or (iii) are below the lower assessment threshold.

Nuisance dust is assessed with regard to the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) which specifies a limit of 350 mg per m2 per day averaged over a 30 +/- 2 day period.

National Air Quality Standards are detailed in Table 8.1.

Table 8.1. Air Quality Standards

Pollutant	Regulation	Limit	Value
Sulphur Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 24 times/year	350 µg/m^3
		Daily limit for protection of human health	125 µg/m^3
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter (as PM_{10})	2008/50/EC	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
Particulate Matter (as $PM_{2.5}$) – Stage 1	2008/50/EC	Annual limit for protection of human health	25 µg/m^3
Particulate Matter (as $PM_{2.5}$) – Stage 2	2008/50/EC	Annual limit for protection of human health	20 µg/m^3
Dust Deposition	TA Luft (German VDI, 2002)	Annual average limit for nuisance dust	350 mg/m2/day

Baseline Air Quality Assessment Methodology

The baseline air quality at the site has been determined with reference to published air quality data contained in the *EPA's Air Quality in Ireland 2023 (EPA 2004*) which includes specific data sets for Dublin City.

Dust Deposition Guidance

The German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m2*day) averaged over a one-month period at any receptors outside the site boundary.

Construction Phase Dust Assessment Methodology

The Construction Phase dust assessment was conducted in accordance with *The Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (2024)* classifies demolition and construction sites according to the risk of impacts and recommends appropriate mitigation measures that are appropriate to the risk.

The IAQM Guidance on the Assessment of Dust from Demolition and Construction' (2024) defines the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 250m for the site entrance. The closest designated site is the River Boyne located c. 300m from the northern site boundary. The River Boyne will not be impacted by construction phase dust emissions due to the extended distance between the site and the River Boyne.

Operational Phase Air Quality Assessment Methodology

The assessment of operational phase air quality was conducted with regard to Transport Infrastructure Ireland (TII) guidance document entitled *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a)* which refers to the following road scenarios which may effect local air quality.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

8.2.4 Climate Assessment Methodology

8.2.4.1 Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage GHG emissions, including embodied carbon, using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site.

The TII Carbon Tool (TII, 2022c) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments, not just road or rail. The use of the TII carbon tool is considered appropriate as the material types and construction activities employed by the proposed development are accounted for in the tool. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The outputs are expressed in terms of tCO2e (tonnes of carbon dioxide equivalent).

8.2.4.2 Operational Phase

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate. The UK Highways Agency DMRB guidance document in relation to climate impact assessments LA 114 Climate (UK Highways Agency, 2019) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy-duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

The above DMRB scoping criteria will be used to determine whether a detailed modelling assessment of traffic emissions is required as part of the EIAR assessment. The proposed development will not cause a change in traffic of more than any of the above scoping criteria. Therefore, no detailed assessment was required as there is no potential for significant impacts.

The EU guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. A Utility & Energy Sustainability Report has been prepared by *Preston MEP Consulting* for the proposed development. The report outlines a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate as a result of the implementation into the design of the development of energy saving and sustainable feature.

The Climate Action Plan 2024 (CAP24) is the third annual update to Ireland's Climate Action Plan. The purpose of the Climate Action Plan is to lay out a roadmap of actions which will ultimately lead to Ireland meeting its national

climate objective of pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. It aligns with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022.

Climate Assessment Criteria

A Climate Assessment considers a greenhouse gas assessment and a climate change risk assessment.

1. Greenhouse Gas Emissions Assessment (GHGA) identifies the GHG emissions associated with a development over the extent of its lifetime.

2. Climate Change Risk Assessment (CCRA) identifies the impact of a changing climate on a development and on the receiving environment. The assessment of the impact of the development on climatic factors is considered in relation to greenhouse gas emissions and climate change.

Climate Assessment Methodology

Institute of Environmental Management & Assessment (IEMA) (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;

- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and

- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

Table 8.2 describes the criteria to determine the significance of a project which considers the extent of GHG emissions associated with the project with regard to Irelands target of Net Zero by 2050 and the extent of mitigation.

Table 8.2. Greenhouse Gas Assessment Significance Criteria

Effect	Significance Level	Description
Significant Adverse	Major Adverse	The project's GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero
	Moderate Adverse	The project's GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero
Not Significant	Minor Adverse	The project's GHG impacts are mitigated through 'good practice' measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero
	Negligible	• The project's GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero

Benificial	Benificial	The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration.

8.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

8.3.1 Baseline Air Quality

The existing ambient air quality in the vicinity of the site has been characterised from published air quality information contained in the *EPA's Air Quality in Ireland 2023 (EPA 2004)*. The proposed development is located in Dublin City which is characterised by the EPA as a Zone A area. Table 8.3 presents the results of the EPA's 2023 monitoring programme in the Zone A area. The most representative monitoring locations in the Dublin City Area with regard to the location of the subject development site are Dublin Port, Pearse Street and Ringsend.

Table 8.3. EPA Zone A 2023 Air Quality Data

Pollutant	Period	Value (µg/m3)	Limit (µg/m3)
NO_2	Annual Mean	19.2-38.8	40
	Houry Max	92.6-113.6	200
SO_2	Annual Mean	1.9-2.2	20
	Houry Max	19.2-30.0	350
	Daily Max	6.3-14.7	125
PM_{10}	Annual Mean	13.8-15.4	40
	Daily Max	45.4-46.9	50
$PM_{2.5}$	Annual Mean	6.6-7.8	25

Source: EPA

With regard to the air quality data detailed in Table 8.2, there were no recorded exceedances of the various limit values for the specified pollutants during the 2023 monitoring year. The EPA's Air Quality in Ireland 2023 (EPA 20034) report suggests that the burning of fossil fuels and road traffic are the principal sources of air pollution in Ireland.

8.3.2 Meteorological Data

The nearest representative synoptic meteorological station to the subject site is at Dublin Airport which is located approximately 15km north of the development site and as such, long-term measurements of wind speed/direction and air temperature for this location are representative of prevailing conditions experienced at the subject site. Recent meteorological data sets for Dublin Airport were obtained from Met Éireann for the purposes of this assessment study as detailed in Table 8.4.

Wind is of key importance for both the generation and dispersal of air pollutants and meteorological data indicates that the prevailing wind direction in the Dublin City area, is from the West and Southwest and blows Northeast across the proposed development. The mean annual wind speed in the Dublin area between 2019 - 2023 is 5.4 m/s.

Table 8.4. Meteorological Data for Dublin Airport 2019-2023

Year	Period	Rainfall (mm)	Mean Temperature (^{0}C)
2019	Annual Mean	886	9.5
2020	Annual Mean	790	10.6
2021	Annual Mean	667	9.8
2022	Annual Mean	688	10.2

2023	Annual Mean	1001	10.6
Mean		806	10.1

Source: Met Eireann

8.3.3 Climate

The Environmental Protection Agency (EPA) (2024) Ireland's Final Greenhouse Gas Emissions (2023) is presented below in Table 8.5 and details the total nation emissions of Greenhouse Gasses. In 2023, Ireland's GHG emissions are estimated to be 55.01 million tonnes carbon dioxide equivalent (Mt CO_2eq), which is 6.8% lower (or 4.00 Mt CO_2 eq) than emissions in 2022 (59.00 Mt CO_2 eq) and follows a 2.0% decrease in emissions reported for 2022. Emissions are 1.2% below the historical 1990 baseline for the first time in 33 years.

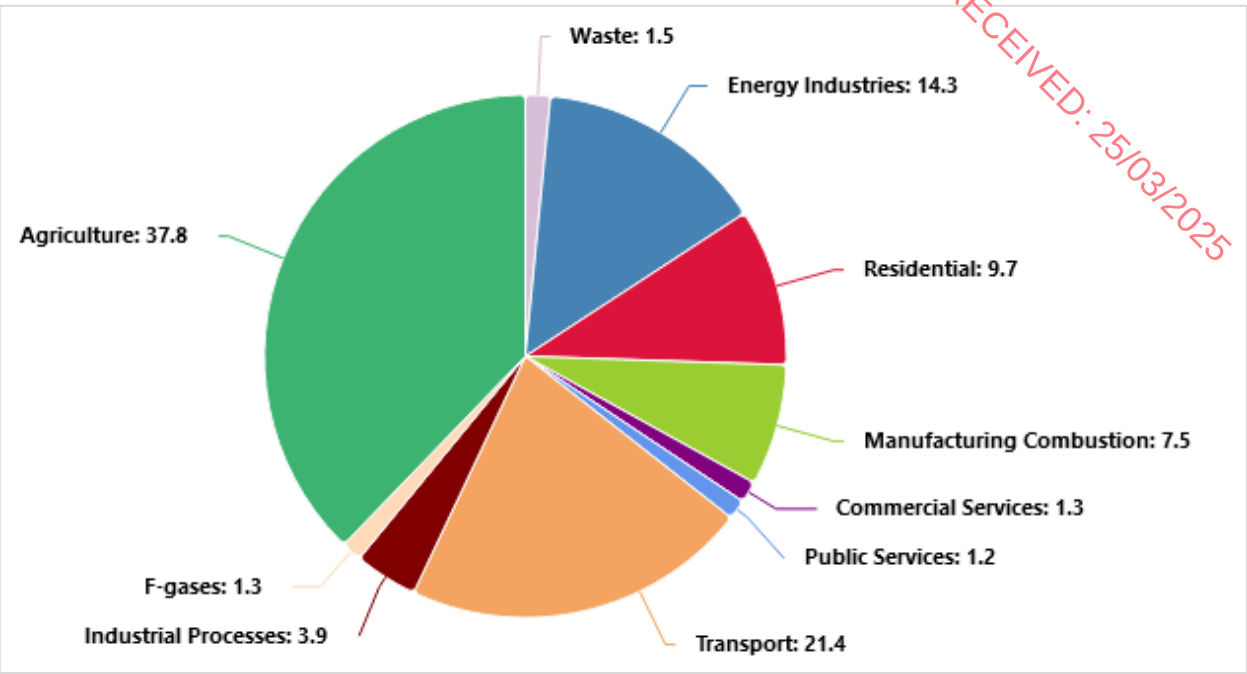
Table 8.5. Total National Greenhouse Emissions 2023

Sector	2022 Emissions (Mt CO_2e)	2023 Emissions (Mt CO_2e)	% Change from 2022 to 2023
Agriculture	21.795	20.782	-4.6%
Transport	11.760	11.791	0.3%
Energy Industries	10.003	7.845	-21.6%
Residential	5.753	5.346	-7.1%
Manufacturing Combustion	4.334	4.133	-4.6%
Industrial Processes	2.288	2.155	-5.8%
F-Gases	0.741	0.699	-5.7%
Commercial Services	0.751	0.732	-2.5%
Public Services	0.696	0.677	-2.7%
Waste Note 1	0.881	0.846	-4.0%
Land Use, Land-use Change and Forestry (LULUFC)	3.983	5.614	40.9%
National total excluding LULUFC[1]	59.003	55.007	-6.8%
National total including LULUFC	62.986	60.620	-3.8%

Source: EPA, 2023

[1] *Land Use, Land Use Change and Forestry*

Figure 8.1. Greenhouse gas emission by sector in 2023



Source: EPA, 2024

8.4 DO NOTHING SCENARIO

If the proposed development does not proceed, construction works will not occur and potential impacts of air quality emissions and climatic impacts will not occur. As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future. Therefore, the construction and operational phase air quality and climatic impacts outlined in this assessment are likely to occur at some stage in the future even in the absence of the proposed development.

8.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

8.5.1 Construction Phase

The construction phase of the development has the potential to generate short-term fugitive dust emissions and engine exhaust emissions associated with construction vehicles and plant. However, these emissions will be controlled by appropriate mitigation techniques throughout the duration of the construction phase.

8.5.2 Operational Phase

The operational phase of the proposed development will see the functioning of a modern, well insulated thermally efficient building. The proposed development has been designed to minimise the impact on climate, where possible, in line with Part L of the Building Regulations. The design of the building will ensure their operation will have a minimum impact on the climate and that their design will withstand future potential extreme weather events associated with climate change.

8.6 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

The proposed development will have two distinct phases being the demolition and construction phase and the operational phase.

8.6.1 Demolition & Construction Phase - Air Quality

Demolition and ground excavation works will be undertaken in separate phases and these activities have the potential to generate fugitive windblown dust emissions rising from the operation of mechanical plant such as excavators and tipper trucks and the movement of these vehicles on exposed surfaces at the site.

With regard to the volume of demolition waste material generated during site clearance there will be a requirement for HGV trucks to remove the material from the site. Trucks shall be loaded with material on-site by mechanical excavators and loading shovels which will generate fugitive dust emissions.

The movements of construction vehicles on the site and concrete cutting activities shall also generate windblown dust emissions. Where dusty waste material is loaded onto exposed open trucks, fine dusts may be released as the truck travels along public roads.

The construction phase will also include the use of site vehicles, plant and machinery including pumps and generators which will generate fossil fuel emissions to atmosphere.

The Institute of Air Quality Management – Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024) classifies demolition and construction sites according to the risk of impacts and to identify mitigation measures appropriate to the risk. The main air quality impacts that may arise are:

- Dust Deposition resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM_{10} concentrations as a result of dust generating activities on site;
- Increase in airborne particles and NO_2 from diesel fuelled site vehicles and plant;

The risk assessment considers the following site activities and their associated potential impacts:

- Earthworks;
- Construction works;
- Trackout (vehicle movements).

The risk assessment considers the following dust related impacts:

- Annoyance due to dust soiling;
- The risk to health from exposure to PM10;
- Harm to Ecological receptors.

The magnitude of the potential dust emission requires the scale of the works to be classified as Small, Medium or Large which are defined as follows:

A. Earthworks

Large Site Area >10,000m^2
potentially dusty soil prone to suspension (e.g. clays)
>10 earth moving vehicles operating simultaneously

Medium Site Area 2500m2 – 10,000m^2
moderately dusty soil (e.g. silts)
5- 10 earth moving vehicles operating simultaneously

Small Site Area <2500m^2
Large grain size (e.g. sands)
<5 earth moving vehicles operating simultaneously

Earthworks Small Site Area 2200m^2

Table 8.6. 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	Low Risk

B. Construction Works

Large Total Building Volume >100,000m^3
Medium Building Volume 25,000m^3 - 100,000m^3
Small Total Building Volume <25,000m^3

Construction Works Building Volume Medium Volume >28,569m^3

Table 8.7. Risk of dust impact Demolition & 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	Low Risk

C. Trackout

Large >50 HGV outward movements per day of potentially dusty clays on unsealed road >100m
Medium 10 - 50 HGV outward movements per day of potentially dusty clays on unsealed road 50 - 100m
Small <10 HGV outward movements per day of potentially dusty clays on unsealed road >50m

Trackout Movements High Volume >50 HGV/day

Table 8.8. 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	Low Risk

The dust risk assessment for soiling, health and ecology completed for each of the aspects of dust emissions has been determined from the characteristics of the development as detailed above. Table 7.8 presents the dust risk for each aspect.

Table 8.9. Dust Risk Assessment to define site-specific mitigation measures

Sensitivity of Area High	Dust Emission Magnitude			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Soiling	NA	High Risk	High Risk	High Risk
Human Health	NA	High Risk	High Risk	High Risk
Ecology	NA	High Risk	High Risk	High Risk

There is a high risk of dust soiling and human health impacts associated with the proposed works. Therefore, best practice dust mitigation measures appropriate for sites with a high risk of dust impacts will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, the air quality and climate impact will be as follows:

The potential impacts of the demolition and construction phase on air quality will be **negative, significant and short-term.**

8.6.2 Demolition and Construction Phase - Climate

Embodied Carbon is the amount of carbon emitted during the construction of a building. The extraction of raw materials, the manufacturing of materials, transportation and installation can all produce carbon emissions.

The impact on Climate associated with the construction phase in the absence of mitigation will have a **negative, not significant, long-term effect.**

8.6.3 Operational Phase

8.6.3.1 Traffic Air Quality

Traffic movements associated with the development have been evaluated and assessed as part of the Traffic & Transport Assessment by *Cronin & Sutton Engineers.* There will be up to 22 vehicle movements per day. The development will not result in an increase in traffic by 1000 AADT or 200 HDV AADT thus local road links will not be adversely impacted by the operation of the development.

In the absence of mitigation, emissions to air from operational traffic associated with the development are predicted to be ***neutral, imperceptible and long-term***.

8.6.3.2 Traffic - Climate

Traffic movements have the potential to release fossil fuel emissions to atmosphere which are a primary source of global warming. The proposed development will have 11-vehicle parking spaces which have a reduced potential to have an impact on climate.

In the absence of mitigation, emissions to climate from operational traffic associated with the development is predicted to be ***neutral, imperceptible and long-term***.

8.6.3.3 Building Operation - Air Quality

If modern energy efficient mechanical plant, insulated materials and low-quality windows were not to be used in the design and construction and mechanical plant was not maintained correctly, the impact on air quality would result in greater emissions to atmosphere which would result in a **negative, slight and long-term.**

8.6.3.4 Building Operation - Climate

Operational Carbon is the amount of carbon emitted once a building is in use. If the building is not designed in a sustainable manner, is not maintained properly or mechanical plant is not routinely serviced, this would result in increased emissions to atmosphere and an increase in the use of resources throughout the life time of the building.

The impact on Climate associated with the operational phase in the absence of mitigation will have a **negative, not significant, long-term effect.**

8.7 'WORST CASE' SCENARIO

A worst-case scenario could occur if the proposed mitigation measures detailed in Section 8.8 of this Chapter are not implemented. A worst-case scenario could have a negative, moderate and short-term impact on air quality and climate during the construction phase and a negative, moderate and long-term-term impact on air quality and climate during the operational phase.

8.8 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

8.8.1 Construction Phase

Air Quality

Implementation of the best practice air quality mitigation measures specified in DCC's *Air Quality Monitoring & Noise Control Units Good Practice Guide for Construction and Demolition.*

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board will also include head/regional office contact details.
- 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.

Site Monitoring

- A programme of dust monitoring at site boundaries shall be implemented for the duration of the construction phase.

Construction & Demolition Works Mitigation

- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.

Climate

- Implementation of the site-specific Resource and Construction Waste Management Plan which defines how the reuse and recycling of materials shall be maximised.

- Prevention of site plant and machinery engines idling.
- Ensure all plant and machinery are well maintained.
- Minimising damage to site construction materials by correct storage and management thus preventing waste being generated.

8.8.2 Operational Phase

Air Quality

There is no mitigation measures required for the operational phase of the development.

Climate

The sustainable design elements of the proposed development contribute to a building design that meets and exceeds the Building Regulations in terms of primary energy consumption and carbon dioxide emissions.

The passive measures included in the design, such as maximizing the use of daylight and minimizing solar gain (glazing selection and solar shading), reducing fabric heat loss through the building envelope and improving the air tightness significantly contribute towards reducing the loads on the active systems within the building.

The active measures mentioned above have been designed to reduce the primary energy consumption through intelligent control and highly efficient plant and equipment.

The sustainable design of the proposed development offers a building that will consume less primary energy than the reference building used to assess Part L compliance.

- Energy efficient LED lighting will be utilised;
- Exhaust air source heat pump technology will be installed; and PV solar panels will be installed to supplement renewable energy
- Use of natural ventilation;
- Use of natural light to reduce the need for artificial lighting;
- Long-lasting and durable materials will be chosen, where feasible, to reduce ongoing maintenance and replacement requirements;
- Proximity to public transport to reduce private car journeys and promote more sustainable travel options;
- Electric Vehicle (EV) charging points will be provided In line with both the building regulations (TGD Part L, since 2021) as well as the Dublin City Development Plan
- The provision of 330 bicycle parking spaces

8.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

8.9.1 Demolition and Construction Phase - Air Quality

In order to minimise dust and construction vehicle emissions during the construction phase, a series of best practice mitigation measures have been developed which will be implemented from the outset of demolition and construction activities to ensure that air quality standards are not exceeded and that air quality does not pose a risk to human health for persons working and living in the local area.

When the best-practice mitigation measures implemented, the impact of the demolition and construction phase proposed development on local air quality will have a **negative, not significant and short-term effect.**

8.9.2 Demolition and Construction Phase - Climate

The proposed development will be constructed using best practice climate mitigation measures to reduce the impacts on Climate. The predicted impact with mitigation relating to Greenhouse Gas emissions will result in a **negative, imperceptible, short-term-term effect.**

8.9.3 Operational Phase - Air Quality

Emissions from vehicle movements and the operation of mechanical plant associated with the development will not generate emissions that would exceed air quality standards. The predicted operational phase impact to air quality with mitigation will result in a **negative, not significant and long-term effect.**

8.9.4 Operational Phase - Climate

The proposed development will be designed to include best practice climate mitigation measures to reduce the impacts on Climate. The predicted impact with mitigation relating to Greenhouse Gas emissions will result in a **negative, imperceptible, long-term effect.**

8.10 MONITORING

8.10.1 Construction Phase

A programme of continuous dust deposition monitoring will be conducted for the duration of the demolition and construction phase at locations along the site boundary adjacent local receptors.

8.10.2 Operational Phase

There is no monitoring proposed for the operational stage.

8.11 REINSTATEMENT

Reinstatement issued are not relevant to this Chapter of the EIAR, with regard to the construction and operational phases.

8.12 CUMULATIVE IMPACT ASSESSMENT

8.12.1 Air Quality - Demolition and Construction Phase

According to the *IAQM* guidance should the construction phase of the proposed development coincide with the construction phase of any other developments within 500m then there is the potential for cumulative construction related air quality and climate impacts to impact nearby sensitive receptors. However, provided the mitigation measures outlined in Section 8.8, are implemented throughout the construction phase of the proposed development and similar mitigations are implemented at other future development sites in the local area, the predicted cumulative impact will result in a **negative, not significant and short-term effect.**

8.12.2 Climate - Demolition and Construction Phase

The proposed development will be constructed using best practice climate mitigation measures to reduce the impacts on Climate. Where similar mitigations are implemented at other future development sites in the local area should they be constructed at the same time, the predicted impact with mitigation relating to Greenhouse Gas emissions will result in a **negative, imperceptible, short-term-term effect.**

8.12.3 Operational Phase - Air Quality

The impact of air quality from the operational phase of the development in conjunction with future developments in the local area, provided appropriate mitigation measures are implemented, will result in a **negative, imperceptible, long-term effect.**

8.12.4 Operational Phase - Climate

The impact on Climate from the operational phase of the development in conjunction with future developments in the local area, provided appropriate mitigation measures are implemented, will result in a **negative, imperceptible, long-term effect.**

8.13 INTERACTIONS

8.13.1 Population and Human Health

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health (Ch.4. Population & Human Health) and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is short-term, imperceptible and negative with respect to population and human health during construction and long-term, imperceptible and neutral during operation phase.

8.13.2 Traffic and Transport

Interactions between air quality and traffic (Ch.11 Traffic & Transport) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be long-term, imperceptible and neutral.

8.13.3 Land Soils and Geology

Construction phase activities such as excavations and building demolition have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils.

8.13.4 Biodiversity

As set out in Chapter 5 Land & Soils, dust generation can occur during extended dry weather periods as a result of construction works and traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. Excavations, which will remove some vegetation such as weeds. It will also generate dust and potentially impact on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant impact on local biodiversity.

8.14 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no difficulties encountered in compiling this Chapter of the EIAR.

8.15 REFERENCES

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- **Dublin City Council, Feb 2024.** *Climate Change Action Plan 2024-2029*.
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