April 2025

Air Quality Assessment Report

Large-Scale Residential Development at LDA Wilton, Sarsfield Road, Cork

On behalf of

The Land Development Agency

MALONE O'REGAN ENVIRONMENTAL

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MALONE O'REGAN ENVIRONMENTAL

Ground Floor – Unit 3
Bracken Business Park
Bracken Road, Sandyford
Dublin 18, D18 V32Y
Tel: +353- 1- 567 76 55
Email: enviro@mores.ie

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Prepared By: Damien Teague **Signed:** Damien Teague

Checked By: Klara Kovacic **Signed:** Klara Kovacic

Approved By: Klara Kovacic **Signed:** Klara Kovacic

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Air Quality Assessment Report

Large-Scale Residential Development at LDA Wilton, Sarsfield Road, Cork

The Land Development Agency

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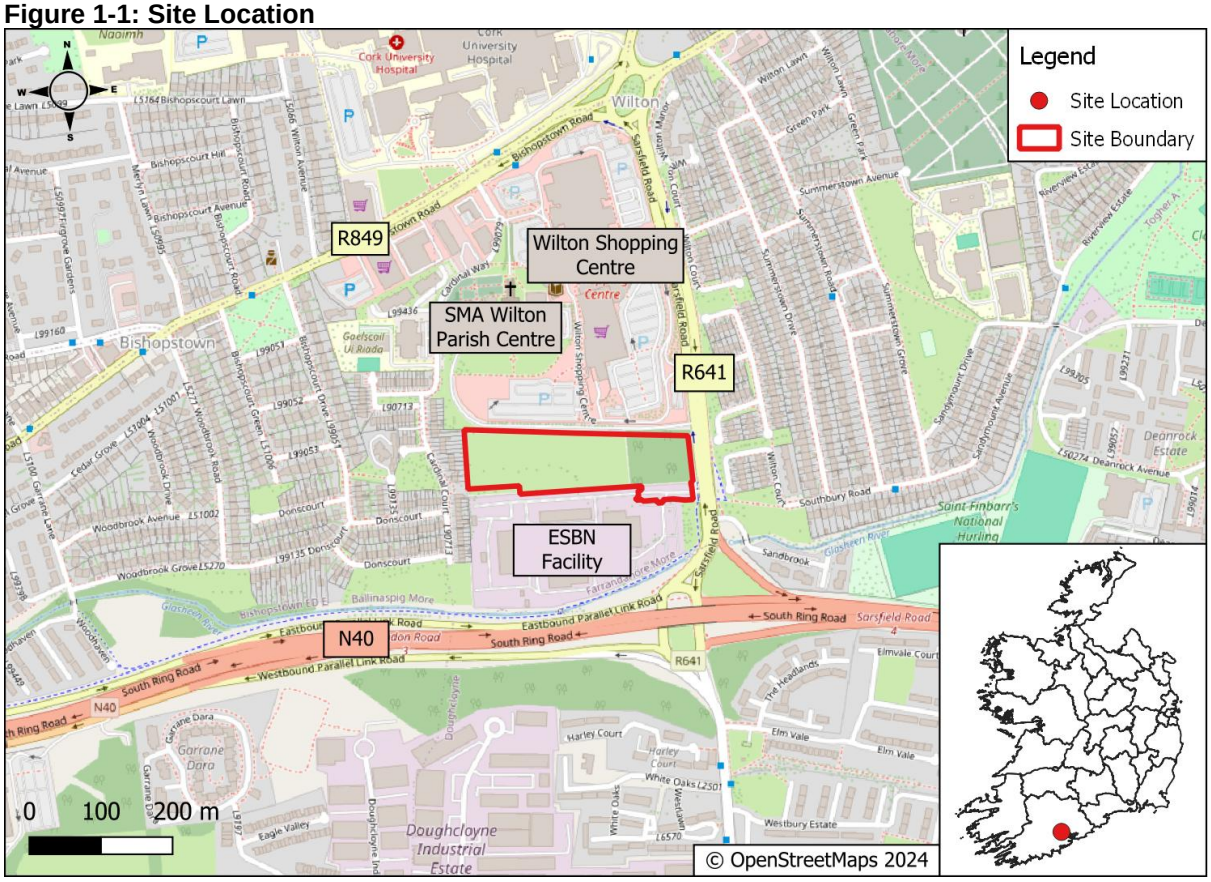
1 INTRODUCTION

Malone O'Regan Environmental ('MOR Environmental') was commissioned by Reddy Architecture on behalf of the Land Development Agency ('the Applicant') to prepare an Air Quality Assessment Report. The location of the Proposed Development ('the Site') is shown in Figure 1-1.

Figure 1-1: Site Location



1.1 Site Context and Description

The Site is located on a circa ('ca') 2.61 hectares ('ha') site, which is located ca. 3km southwest of Cork City. The Site is located in the centre of Wilton, to the west of Sarsfield Road (R641). The surrounding area is largely made up of residential, commercial, and institutional uses. The Site is bordered to the north by the access road to the SMA Wilton Parish Centre and its associated buildings and lands. Wilton Shopping Centre and car park is located immediately to the east of the SMA Wilton Parish Centre and its associated buildings. To the west of the Site and east of Sarsfield Road comprise large semi-detached and terraced residential premises. The Site is bound to the south by the Wilton Electricity Supply Board Networks ('ESBN') Facility.

The Site is accessed via the ESB Networks facility entrance and a gate along the regional road R641, also known as Sarsfield Road, that connects to the N40 'Cork South Ring Road.' The Site comprises an area of amenity grassland and a scrub section in the northeast corner. A hedgerow/treeline borders the north and west of the Site and the section of scrub. See Figure 1-2 for context.

Figure 1-2: Site Context

1.2 Proposed Development

The Land Development Agency ('LDA') intends to apply to Cork City Council for permission for a Large Residential Development with a total application site area of ca. 2.61ha, on lands adjoining the ESB Networks DAC Office, at Farrandahadore More, Sarsfield Road, Wilton, Cork City. The development will provide 348 residential units, a 156 sqm childcare facility, revised access arrangements to Sarsfield Road, and all associated development above and below ground. See Figure 1-3 below.

Full details of the Proposed Development can be found in the Planners Report submitted as part of this planning application.

Figure 1-3: Proposed Development Layout

1.3 Scope of the Assessment

The purpose of this report is to provide an Air Quality report detailing the potential impact of the Proposed Development on the surrounding area. This report has been prepared following pre-planning discussions and aims to meet the project scope that was agreed at the conclusion of those discussions.

2 METHODOLOGY & POLICY CONTEXT

The following standards and guidance documents were used to evaluate the baseline conditions and will be used in the assessment of potential impacts on the receiving environment:

- Institute of Air Quality Management ('IAQM') Guidance on the Assessment of Dust from Demolition and Construction [1];
- Air Quality in Ireland 2022 – Indicators of Air Quality [2];
- Air Quality in Ireland 2021 – Indicators of Air Quality [3]; and,
- Transport Infrastructure of Ireland – Air Quality Assessments for specified infrastructure projects [4].

The assessment of air quality impacts during the Construction Phase of the Proposed Development will follow the methodology outlined by the UK Institute of Air Quality Management ('IAQM'), specifically the Guidance on the assessment of dust from demolition and construction [1]. The primary considerations for potential air quality impacts during the Construction Phase involve airborne PM_{10} and nuisance dust deposition. The potential impacts on air quality from NO_2 emissions, as a result of plant operations during the Construction Phase, was screened out in accordance with the IAQM guidance which indicates that such emissions are unlikely to make a significant impact on local air quality.

Traffic emissions resulting from increased vehicles utilising local road networks are also to be accounted for within the operational phase of the Proposed Development. However, construction phase heavy goods vehicles ('HGVs') have been screened out of assessment in accordance with the threshold within the TII guidance as flows will change by less than 200 Annual Average Daily Traffic ('AADT') or more. As the predicted HGV count is approximately 30 for the construction phase, this remains below the threshold and the potential impact is deemed not likely and not significant for this Proposed Development.

For the Operational Phase, the assessment will focus on the potential impacts of traffic on emissions within a Traffic Study Area, which has been identified based on thresholds defined in the TII guidance on Air Quality Assessment for Specified Infrastructure Projects [4].

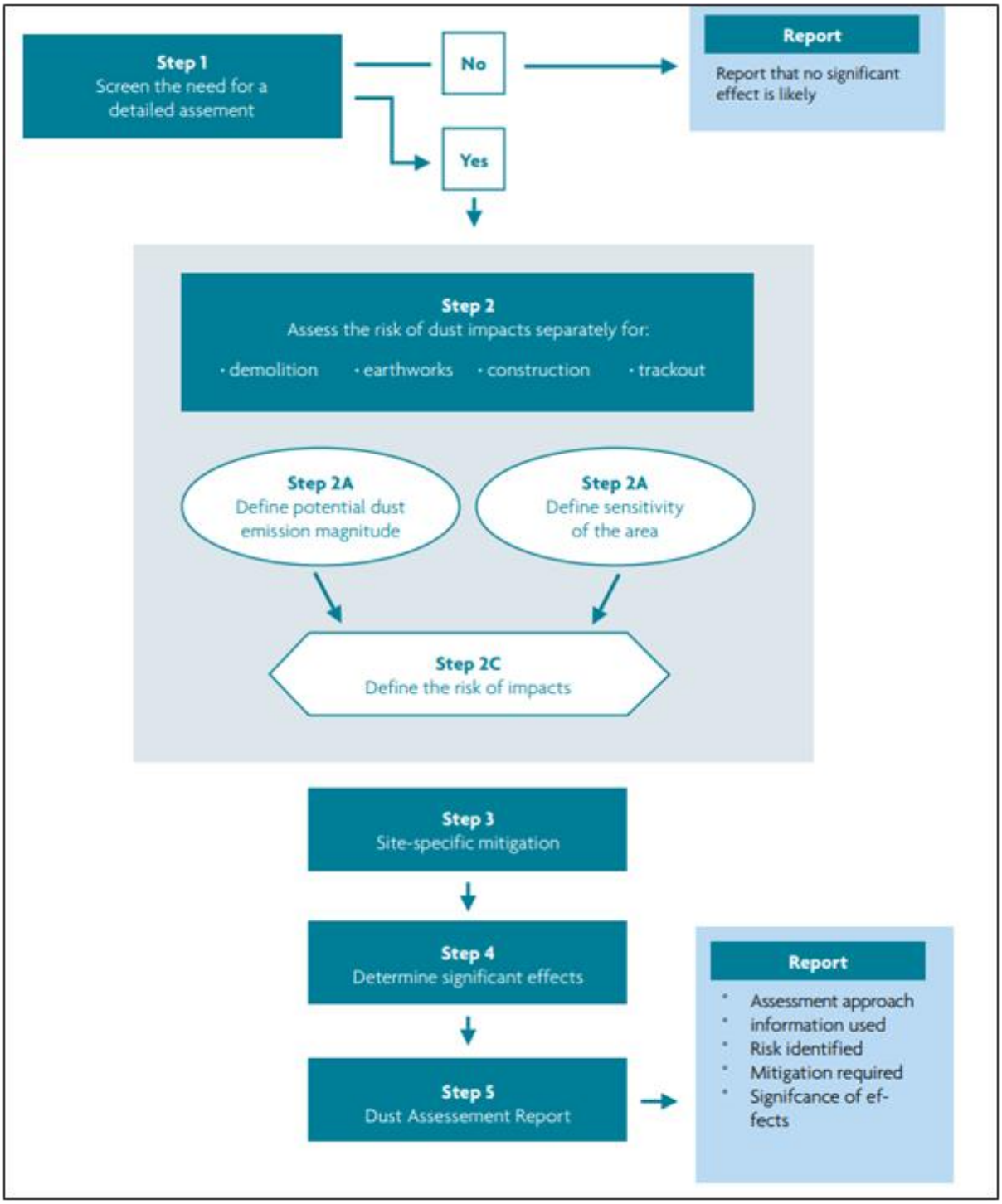
To provide a baseline for local air quality in the vicinity of the Proposed Development, PM monitoring was carried out between the 11th December 2024 and the 26th February 2025. Additionally, passive nitrogen oxides sampling was carried out between the 28th January 2025 and the 26th February 2025.

2.1 Construction Dust Risk Assessment

A risk assessment of dust emissions arising from construction activities in relation to the Proposed Development will be completed in accordance with the IAQM – Guidance on the Assessment of Dust Emissions from Demolition and Construction [1].

A flow chart outlining the various steps associated with the preparation of a dust risk assessment are outlined in Figure 2-1 below and a detailed methodology presented in Appendix A.

Figure 2-1: Steps to Perform a Construction Dust Risk Assessment



An assessment of the potential impacts of dust associated with the Construction Phase is required when:

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

As no demolition activities are predicted to occur, on-site demolition was screened out as a potential source of dust emissions. The assessment is based on a combination of information supplied and work on similar housing projects previously worked on by MOR Environmental.

2.2 TII Road Emissions Model

The Transport Infrastructure Ireland ('TII') REM tool was employed for this assessment, focusing on pollutants such as NO_2 and particulate matter (PM_{10} and $PM_{2.5}$). TII developed the Road Emissions Model ('REM') for assessing the air quality effects of road developments [4]. The REM tool provides estimates of pollutant concentrations from vehicular use on identified routes associated with the Proposed Development. It integrates traffic volumes and speeds for light-duty vehicles ('LDVs') and HGVs on the Irish National Road Network with fleet composition specific to Ireland [4].

To generate vehicle emissions for individual links, the REM utilises the Emission Rate Database and Fleet Mix Database in combination with traffic data. The emissions calculated by the REM tool align with the output of the Department of Agriculture, Food and the Marine ('DEFRA') Emission Factors Toolkit, which incorporates emission profiles for NO_2 and particulate matter (PM_{10} and $PM_{2.5}$).

The REM predicts the atmospheric pollutant concentrations resulting from road-source emission rates considering dispersion, which increases with distance. The calculation generates ambient pollutant concentrations. Additionally, the TII REM tool performs the conversion of NO_x to NO_2, allowing for the presentation of results as NO_2 concentrations, which can be compared against the Air Quality Standards.

The traffic flow data used in the REM model must be presented as AADT broken down into light and heavy vehicle traffic for use. An ILTP consulting report on traffic associated with the Proposed Development predicts 282 trips generated during the peak hours of the operational development in the opening year of 2028. However, this encompasses only 8-9 am and 5-6 pm traffic; as such, it is not easily comparable to AADT traffic generation as simple multiplication to a full day's traffic will not capture the lower traffic numbers outside peak hours (particularly at night).

To provide a value for AADT arising from the Proposed Development, a comparison was made to another housing development with similar housing capacity. Comparison was made based on the housing capacity of the development, as residents will form the majority of traffic generated from a LRD. The Proposed Development will have a maximum capacity of 562 people, assuming full occupancy bedrooms and the LRD selected for comparison has a maximum occupancy of 564 people and generates an additional 1871 AADT.

The Proposed Development will have one entrance / exit for traffic, connecting to the Sarsfield Road. The ILTP consulting report [5] separates traffic flow from the Proposed Development on the Sarsfield Road, with 30% of trips directed northbound on Sarsfield Road and 70% of trips directed southbound (based on Section 7.3.2 of the ILTP report). Additionally, the distribution of heavy and light vehicle usage is not known. To provide a worst-case value reflective of traffic in the area, the percentage makeup of TII AADT [6] figures for the South Ring Road were utilised. In this case, a value of 3.7% HGVs was used from the westbound South Ring Road figures from 2021, selected for the high HGV percentage and complete annual traffic coverage.

Using these AADT values, there will be an increase of 561 AADT northbound and 1310 AADT southbound for Sarsfield Road traffic resulting from the Proposed Development, based on the trip distribution of the ILTP report. Further breakdown of the southbound traffic into three connected road links splits the 1310 AADT into 748 AADT (South Ring Road eastbound), 468 AADT (South Ring Road westbound) and 94 (south of South Ring Road interchange). As such, effects arising from the northbound traffic on the Sarsfield Road, the connected northern

road links, and the southern road links connected to Sarsfield Road can be considered not significant under the TII guidance [4], which scopes out AADT flow changes below 1000 AADT. Based on the assumed HGV percentage, 48 AADT is HGVs, and the remaining 1262 AADT is other vehicles.

2.3 Relevant Ambient Air Quality Standards

Assessment of the significance of a particular level of pollution is made with reference to limit values established in the latest EU legislation, the Clean Air for Europe ('CAFÉ') Directive (2008/50/EC) (European Parliament, 2008), which was transposed into Irish law as S.I. 180 of 2011 [7].

Air Quality Standards ('AQSs') are usually based on pollutants' effects on human health, although other factors, such as effects on vegetation, are sometimes considered.

The relevant limit values for AQS as set by S.I. 180 of 2011 are presented in Table 2-1.

Table 2-1: EU and Irish Air Quality Standards

Pollutant	Objective			
	Concentration	**Maximum No. of Exceedances permitted**	**Exceedance Expressed as Percentile**	**Measured as**
Nitrogen Dioxide (NO_2)	200 µg/m^3	18 times per year	99.8th percentile	1-hour mean
	40 µg/m^3	~	~	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3	35 times per year	90.4th percentile	24-hour mean
	40 µg/m^3	~	~	Annual mean
Fine Particulate Matter ($PM_{2.5}$)	20 µg/m^3	~	~	Annual mean

In addition to the standards set out above, the World Health Organisation ('WHO') has published several Air Quality Guidelines ('AQG') [8], with the aim of improving air quality by 2030. These recommended guidelines contain short-term interim targets to guide the transition towards the long-term AQG.

The relevant limit values for AQG as set by WHO are presented in Table 2-2.

Table 2-2: WHO Air Quality Guidelines for 2030

Pollutant	Concentration (µg/m^3)					Exceedance Expressed as Percentile	Measured as
	Interim Targets				AQG		
	1	**2**	**3**	**4**			
Nitrogen Dioxide (NO_2)	120	50	-	-	25	99th percentile	24-hour mean
	40	30	20	-	10	~	Annual mean
Particulate Matter (PM_{10})	150	100	75	50	45	99th percentile	24-hour mean
	70	50	30	20	15	~	Annual mean
	75	50	37.5	25	15	99th percentile	24-hour mean

Pollutant	Concentration (µg/m³)					Exceedance Expressed as Percentile	Measured as
	Interim Targets				AQG		
	1	2	3	4			
Fine Particulate Matter ($PM_{2.5}$)	35	25	15	10	5	~	Annual mean

2.4 Assessment of Significance

Impact descriptors at each sensitive receptor location were utilised to assess changes in pollutant concentrations and evaluate descriptors. These descriptors will consider the percentage change in concentration relative to the air quality standard of the pollutant, as outlined in Table 2-3 below.

Table 2-3: Significance Criteria outlined in the TII Guidance [4]

Long-term average concentration at receptor in assessment year	% Change in concentration relative to the AQS			
	1	2-5	6-10	>10
75% or less of AQS	Neutral	Neutral	Slight	Moderate
76-94% of AQS	Neutral	Slight	Moderate	Moderate
96-102% of AQS	Slight	Moderate	Moderate	Substantial
103-109% of AQS	Moderate	Moderate	Substantial	Substantial
110% or more of AQS	Moderate	Substantial	Substantial	Substantial

2.5 Policy Context

2.5.1 National Clean Air Strategy

The Department of Environment, Climate Action and Communications ('DECC') have developed a Clean Air Strategy [9]. The aim outlined indicates the effort to reduce certain specific sources of emissions that are having the greatest impact whilst also identifying cost-effective approaches to emission reductions [9].

The Clean Air Strategy outlines key strategic priorities relating to air quality in Ireland, including:

- Ensure continuous improvements in air quality across the country;
- Ensure the integration of clean air considerations into policy development across Government;
- Enhance regulation and enforcement; and,
- Promote and increase awareness of the importance of clean air.

According to the document, emissions related to PM_{10} amounted to 28.28kt in 2020, residential and commercial / institutional accounting for an additional 25.4% share of the total national PM_{10} emissions [9].

2.5.2 Cork City Council Development Plan

In line with the new development plan prepared for Cork City for the period 2022-2028, the Council has set specific objectives related to air quality. Objective 9.18 reflects the commitment of the Council to:

- To protect and improve air quality in Cork City per the provisions of EU Directives and national legislation on air pollution and support the actions of the Cork City Council's Air Quality Strategy 2021-2026 and its successors; and,
- To continue to monitor air quality results submitted from selected locations throughout the city in cooperation with the Environmental Protection Agency and support the creation of a regional air quality and greenhouse gas emissions inventory.

3 RECEIVING ENVIRONMENT

3.1 Background Air Quality - EPA

EU legislation on air quality requires that all Member States divide their territory into zones for the assessment and management of air quality. The current trends in air quality in Ireland are reported in the EPA publication Air Quality in Ireland (Key Indicators of Ambient Air Quality) – Annual Report 2023 [2] Which is the most up-to-date report on air quality in Ireland.

For ambient air quality management and monitoring in Ireland, four zones, A, B, C, and D, are defined in the AQS Regulations (S.I. No. 180 of 2011) and are defined as follows:

- Zone A: Dublin Conurbation;
- Zone B: Cork Conurbation;
- Zone C: 24 cities and large towns. Includes Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee, Dundalk, Navan, Newbridge, Mullingar, Letterkenny, Celbridge and Balbriggan, Portlaoise, Greystones and Leixlip; and,
- Zone D: Rural Ireland, i.e., the remainder of the State excluding Zones A, B & C.

According to the above classification, the Proposed Development is in Zone B. Table 3-1 below shows the baseline air quality data in several Zone B regions.

Table 3-1: Mean Concentrations of Pollutants Measured in Zone B

Parameter/Station	2022 Annual Mean (µg/m^3)	2023 Annual Mean (µg/m^3)
Heatherton Park		
NO_x	-	-
PM_{10}	11.9	11.0
$PM_{2.5}$	5.4	5.8
UCC Distillery Fields		
NO_x	9.0	7.6
PM_{10}	-	-
$PM_{2.5}$	4.8	-
Cork Mallow		
NO_x	15.8	13.3
PM_{10}	-	-
$PM_{2.5}$	-	-
South Link Road		
NO_x	17.9	15.0
PM_{10}	15.8	-
$PM_{2.5}$	-	-

Parameter/Station	2022 Annual Mean (µg/m^3)	2023 Annual Mean (µg/m^3)
Bishopstown MTU		
NO_x	-	-
PM_{10}	14.4	11.4
$PM_{2.5}$	-	6.5
Cork Glanmire Rd		
NO_x	32.1	23.0
PM_{10}	14.1	13.2
$PM_{2.5}$	-	-
Cork Carrigaline		
NO_x	-	-
PM_{10}	-	-
$PM_{2.5}$	13.9	7.3
Cork Airport		
NO_x	-	-
PM_{10}	-	12.1
$PM_{2.5}$	-	-
Cork Port		
NO_x	-	-
PM_{10}	-	12.3
$PM_{2.5}$	-	7.1
Average Zone B 2022-2023 (µg/m^3)		
NO_x	16.7	
PM_{10}	13.0	
$PM_{2.5}$	7.3	

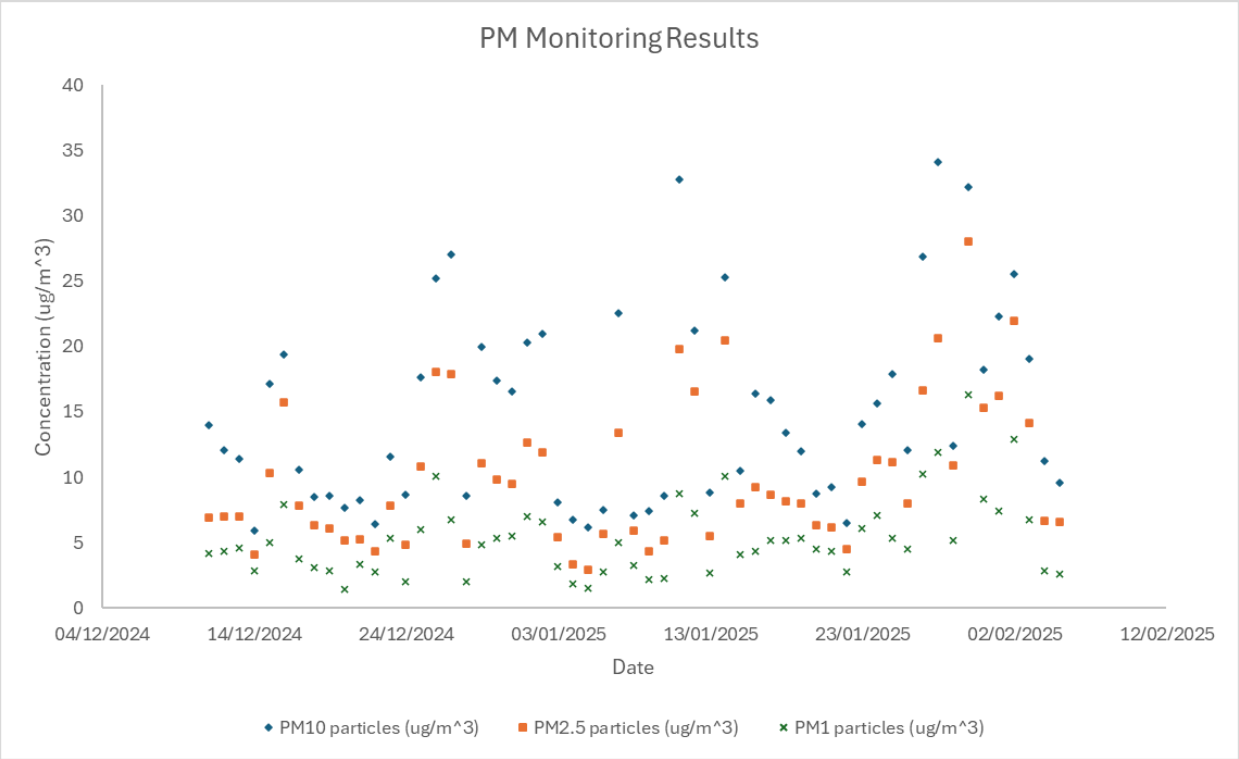
In Zone B, the highest annual NO_2 concentration in Zone B was recorded at Cork Glanmire Road Station in 2022 (32.1µg/m^3). Annual concentrations across Zone B range between 7.6µg/m^3 and 32.1µg/m^3. The highest recorded annual PM_{10} concentration was 15.8 µg/m^3 at the South Link Road Station in 2022. Annual PM_{10} concentrations across Zone B range between 11.0 µg/m^3 and 15.8 µg/m^3. For $PM_{2.5}$, the maximum annual concentration in Zone B was 13.9 µg/m^3 at the Cork Carrigaline station in 2022. Annual $PM_{2.5}$ concentrations across the zone ranged from 4.8 µg/m^3 to 13.9µg/m^3.4

3.2 Air Quality Monitoring

3.2.1 Particulates Matter (PM)

PM monitoring results are shown in Figure 3-1 below.

Figure 3-1: PM Monitoring Results



The average PM results across this period were:

- PM_{10} – 14.92µg/m^3;
- $PM_{2.5}$ – 10.02µg/m^3; and,
- PM_1 – 5.31µg/m^3.

Compared to the Zone B concentration averages presented in Section 3.1 above, the monitoring results display a higher average and, as such, will be carried forward as the background PM concentrations for assessment to provide a worst-case assessment. However, it should be noted that the time periods each dataset is averaged over are different (one year versus two months). Hence, monitoring results are not fully reflective of annual average results within the scope of AQS.

3.2.2 NO_x

NO_x monitoring occurred at the Site access gate and West of the Site. Sampling occurred over approximately 29 days, and the results reflect an average of the NOx conditions across that time period. Results are presented in Table 3-2 below.

Table 3-2: NOx Results

Sampling Site	Concentration (ug/m^3)		
	NO	NO_2	NO_X
Wilton Access Gate	3.7	14.5	18.2
Wilton West	4.1	8.9	13.0

Compared to the Zone B concentration averages presented in Section 3.1 above, the monitoring results at the Site access gate, nearest the Sarsfield Road, display a higher average and, as such, will be carried forward as the background NO_x concentrations for assessment to provide a worst-case assessment. However, it should be noted that the time periods each dataset is averaged over are different (one year versus approximately one month), so monitoring results are not fully reflective of annual average results within the scope of AQS.

3.3 Sources of Emissions to Air in the vicinity of the Site

Notable sources of emissions to air in the vicinity of the Proposed Development include:

- Traffic associated with roads, including the South Ring Road (N40), Sarsfield Road and other roads identified in the area:
    - TII traffic counts [6] for the N40 between 2021-2023 ranged from:
        - 54,241 and 67,109 AADT between Jn 4 Sarsfield and Bandon Road N71; and,
        - 67,330 and 81,724 AADT between Jn 4 Sarsfield Road and Jn 5 Togher.
- Residential dwellings (potential solid fuel combustion); and,
- Emissions related to the Wilton Shopping Centre north of the Site and ESB Networks location south of the Site.

The closest Industrial Emission ('IE') licenced facilities are outlined in Table 3-3 below.

Table 3-3: Licenced facilities located within 10km of the Proposed Development

Licence Number	Name of Organisation	Activities Associated	Distance to Proposed Development	Relevant Licence emissions limit to Atmosphere
P0391	Galco (Cork) Ltd.	The processing of non-ferrous metals by thermal and chemical means in an installation with a batch capacity exceeding 0.5 tonnes	1.8km (east)	Total Dust: 10mg/Nm^3
P0348	Heiton Buckkley Ltd.	The treatment or protection of wood, involving the use of preservatives, with a capacity exceeding 10 tonnes per day.	1.8km (southwest)	N.A.

Licence Number	Name of Organisation	Activities Associated	Distance to Proposed Development	Relevant Licence emissions limit to Atmosphere
P0070	Irish Oxygen Co. Ltd.	The manufacture, by way of chemical reaction processes, of organic or organo-metallic chemical products other than those specified at 5.2.	2.1km (southwest)	N.A.
P0407	Irish Pioneer Works (Fabricators) Ltd.	The processing of ferrous metals: application of protective fused metal coats with an input exceeding 2 tonnes of crude steel per hour	2.6km (east)	Total Particulates (as PM_{10}): 5mg/m^3
P0578	Electricity Supply Board (Marina)	The operation of combustion installations with a rated thermal input equal to or greater than 50MW.	4.8km (northeast)	Firing on Distillate: Nitrogen oxides (as NO_2): 400mg/Nm^3 Particulates: 15mg/Nm^3 Firing on Natural Gas: Nitrogen oxides (as NO_2): 275mg/Nm^3
P01018	Little Island BioEnergy Ltd.	Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, and excluding activities covered by Directive 91/271/EEC: (i) biological treatment; (ii) pre-treatment of waste for incineration or co-incineration; (iii) treatment of slags and ashes; (iv) treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components. When the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for this activity shall be 100 tonnes per day	8.9km (northeast)	Combined CHP engine stack Nitrogen oxides (NO_x as NO_2): 500mg/m^3 Dust Deposition Limits: Level: 350mg/m^3/day
P0052	BASF Ireland Ltd.	The production of basic organic chemicals and the recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a	9.0km (northeast)	A2-4: TAED Plant Filter Particulates: 10mg/m^3 A1-1: Boilers No.1 & 2 Nitrogen oxides (as NO_2): 170mg/l A1-2: Boiler No.3

Licence Number	Name of Organisation	Activities Associated	Distance to Proposed Development	Relevant Licence emissions limit to Atmosphere
		licence under the said Part is or will be required.		Nitrogen oxides (as NO_2): 200mg/l A1-3: Boiler No. 6 Nitrogen oxides (as NO_2): 300mg/l Dust: 20mg/m^3
P0017	Cara Partners	The use of a chemical process for the production of basic pharmaceutical products	9.4km (northeast)	N.A.
P0136	Upjohn Manufacturing Ireland Unlimited Company	The use of a chemical or biological process for the production of basic pharmaceutical products. The recovery of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required. Installations using a chemical or biological process for the production of basic pharmaceutical products. Installations for recovery of hazardous waste as defined in the list referred to in Article 1(4) of Directive 91/689/EEC, as defined in Annex I1 B (operation R1) to Directive 2006/12/EC, with a capacity exceeding 10 tonnes per day.	9.4km (northeast)	V1 Daily Average: Total dust: 10mg/m^3 Oxides of Nitrogen (NO and NO_2 as NO_2): 200mg/m^3 V28 (and V1 when operating on natural gas): Nitrogen oxides (as NO_2): 400mg/m^3

As per the EPA's AG4 Guidance on Air Dispersion Modelling [10], a cumulative assessment is conducted when there is potential for significant overlap in the impact of two or more installations. The facilities mentioned in Table 3-1 above fall outside the 250m maximum extent for dust-generating activities to impact nearby receptors, identified by the IAQM Guidance [1], associated with the Construction Phase of the Proposed Development.

According to the EPA's Inspector's Report, the nearest point sources from the Proposed Development, Galco (Cork) Ltd., operate within their air emission limits, with no reported exceedances. Therefore, the potential for cumulative emissions associated with nearby IEL license sites is considered not likely and not significant and will not be considered further.

Assessment of the potential impacts of the Proposed Development arising from AADT increases on the South Ring Road are not being considered at this stage due to a lack of specific traffic data and the current scale of traffic proposed as part of the operational phase of the development. Peak time trips generated by the operational development is currently predicted at 282 trips per day, which is significantly lower than the complete TII 2023AADT

figures [6] for the South Ring Road (Eastbound 81,724 AADT, Westbound 67,109 AADT). As such any impacts from traffic increases on the road will form only a small percentage of impacts arising from South Ring Road traffic.

3.4 Construction Phase Dust Sensitive Receptors

For the purpose of the Construction Dust Risk Assessment, a human receptor denotes any site where individuals could be subject to the health consequences of airborne particulate matter or disturbances in amenities or properties from dust deposition [1]. Proxies are provided to represent the most prominent/closest receptors to the Proposed Development.

When numerating a receptor as a proxy, exact counting is not required [1]. As an alternative, it is recommended that professional judgement is utilised by the competent person and determine the approximate number of receptors (i.e. residential dwelling: 1 receptor, school: >100 receptors).

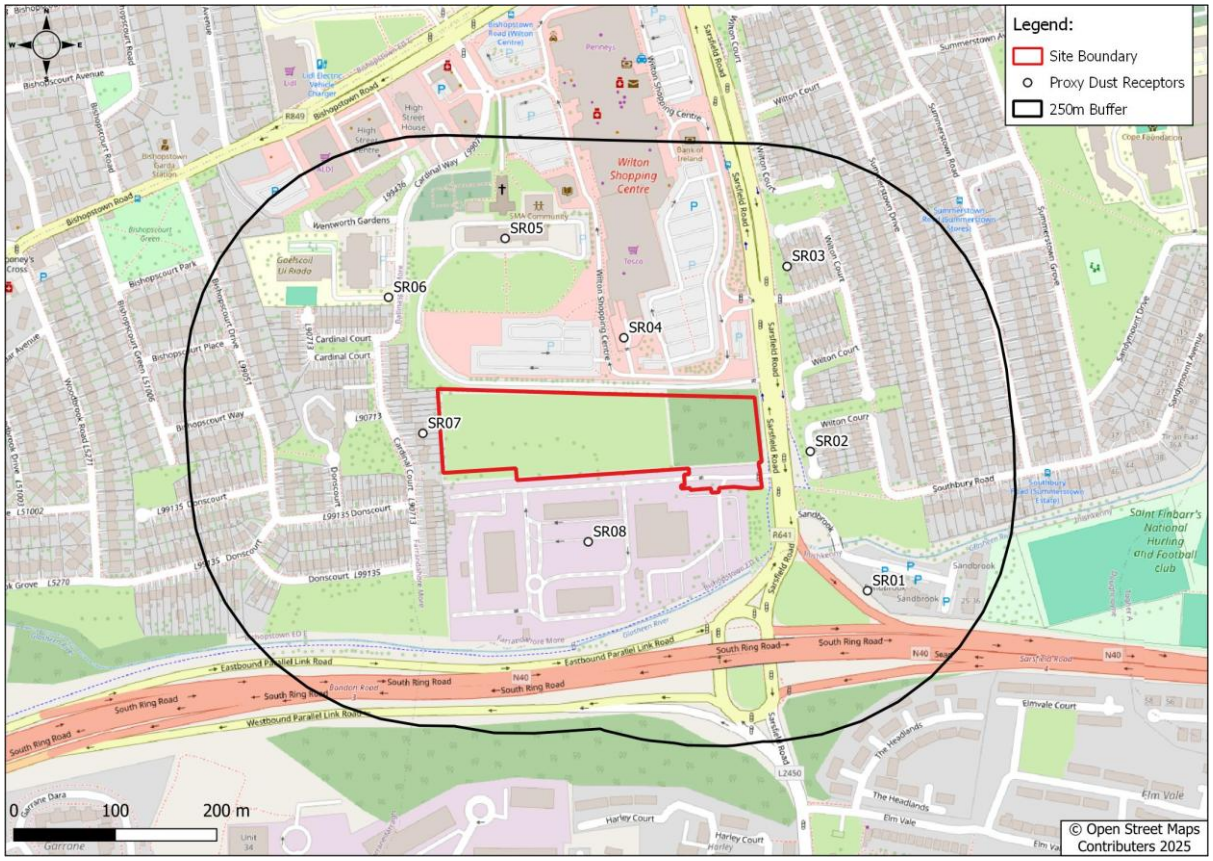
A total of eight human receptors were identified at varying distances to the redline boundary and the primary access route. As such, a conservative approach for assessing receptors within 250m of the dust-generating activities has been adopted for this assessment (Table 3-4 and Figure 3-2 below). The distances displayed below show the receptors distance to the nearest dust source, taken as the site boundary or the primary access route used by construction vehicles.

Table 3-4: Dust Sensitive Receptors

ID	ITM (Easting, Northing)		Description of Sensitive Receptor	Distance/ Ordination from Emission Source (m)	Terrain between Site and Receptor
	E	N			
SR01	565265.7	565265.7	Proxy for residential houses to the southeast High Sensitivity	ca.146m (Site Boundary)	The terrain between the receptor and the potential dust-generating activities is dominated by the Sarsfield Road, which has limited treelines.
SR02	565209.3	569656.8	Proxy for residential houses to the east High Sensitivity	ca.49.0m (Site Boundary)	The terrain between the receptor and the potential dust-generating activities is dominated by the Sarsfield Road, which has limited treelines.
SR03	565186.4	569839.1	Proxy for residential houses to the northeast High Sensitivity	ca.133m (Site Boundary)	The terrain between the receptor and the potential dust-generating activities is dominated by the Sarsfield Road, which has limited treelines.
SR04	565025.4	569768.8	Proxy for Wilton Shopping Centre and car parks to the north Medium Sensitivity	ca.55.3m (Site Boundary)	Terrain between the receptor and the potential dust generating activities is has limited treelines.
SR05	564908.4	569866.6	Proxy St. Josephs Church, Bishopstown Library, and SMA	ca.150m (Site Boundary)	Terrain between the receptor and the potential dust-generating activities has treelines and a car park.

ID	ITM (Easting, Northing)		Description of Sensitive Receptor	Distance/ Ordination from Emission Source (m)	Terrain between Site and Receptor
	E	N			
			Community Centre to the northwest High Sensitivity		
SR06	564793.4	569808.6	Proxy for Bru Columbanus Non-Profit and Gaelscoil Uí Riada to the northwest High Sensitivity	ca.102m (Site Boundary)	Terrain between the receptor and the potential dust-generating activities has treelines.
SR07	564827.3	569674.6	Proxy for residential houses to the west High Sensitivity	ca.17.4m (Site Boundary)	The terrain between the receptor and the potential dust-generating activities has a treeline, but the nearest receptors from this proxy are close to the boundary.
SR08	564990.3	569567.8	Proxy for ESB facility to the south Low Sensitivity	ca.61.6m (Site Boundary)	The terrain between the receptor and the potential dust-generating activities has limited treelines.

Figure 3-2: Location of Proxy Sensitive Receptors around the Site boundary



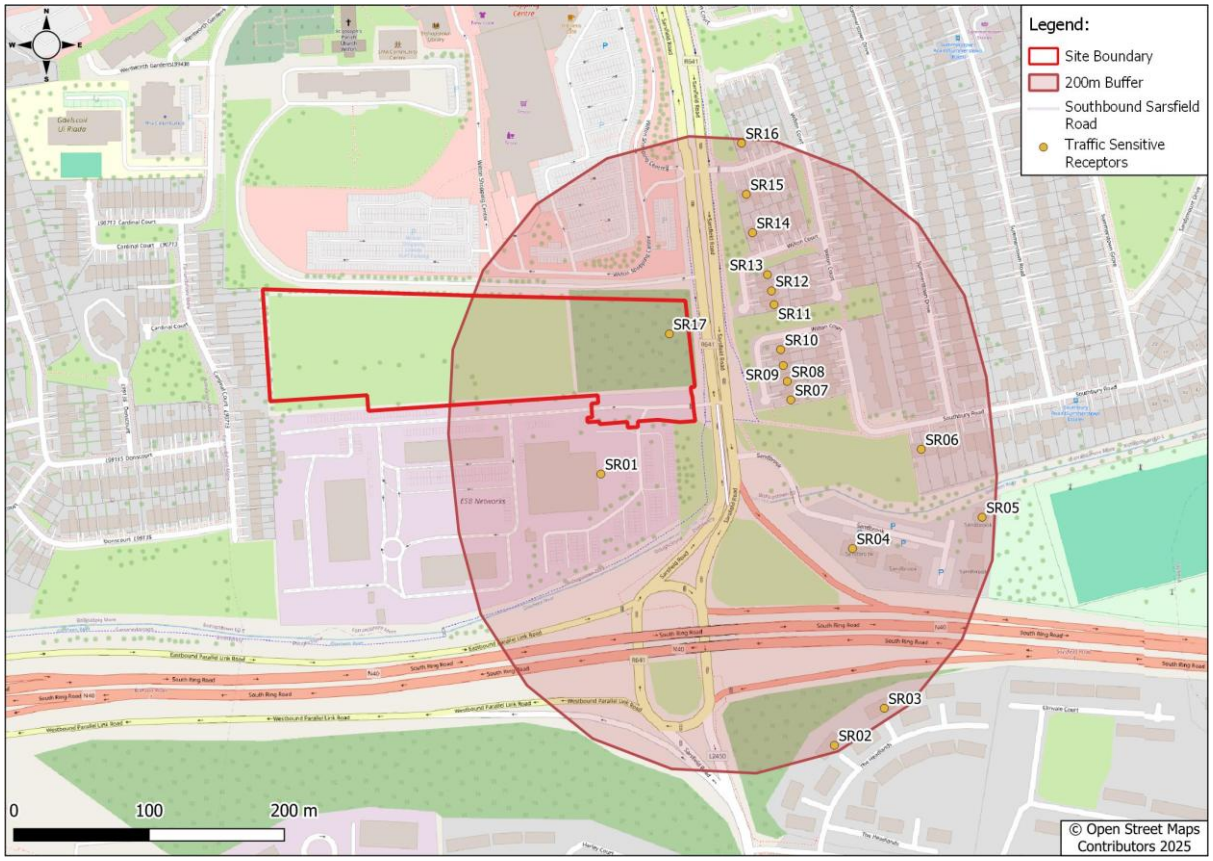
Eight proxy human receptors were identified within 250m of the Site boundary (SR01-SR09), ranging in distance from 17.4m to 150m. Each proxy represents approximately 10-100 receptors, except for SR05 and SR06, which represent >100 receptors.

3.5 Traffic Emissions Sensitive Receptors

Site-specific AADT changes on associated transport links to the Site are not available for use in this assessment. Additionally, construction traffic and operational phase traffic on South Ring Road have been screened out in Section 2 and Section 3.3 of this report. Following this screening, the primary source of potential traffic impacts arises from increased traffic on Sarsfield Road, southbound from the Site. Other receptors are not considered to be significantly affected by traffic generated during the operational phase of the Proposed Development, following the TII Guidance [4].

In the local air quality assessment for development, receptors sensitive to air quality within 200m of the relevant traffic links were considered, following the TII Guidance [4]. For the purposes of this assessment, the closest receptors within 200m of the southbound section of the Sarsfield Road will be considered, as these receptors have the highest likelihood of experiencing impacts. From this, a total of 17 receptors were identified within 200m of the Sarsfield Road, predominantly associated with residential housing estates to the east of the Proposed Development. SR17 was included to specifically account for air quality for the residences of the Proposed Development (see Figure 3-3 below).

Figure 3-3: Traffic Sensitive Receptors within 200m of Sarsfield Road



3.6 Weather Conditions

Weather conditions can have a significant effect on the dispersion of ambient dust, thus influencing the impacts on nearby sensitive receptors. Higher levels of dust deposition typically occur during dry spells associated with medium to strong breezes (>5.5m/s).

The nearest meteorological station is Cork Airport Co. Cork, which is located approximately 3.7km south of the Proposed Development.

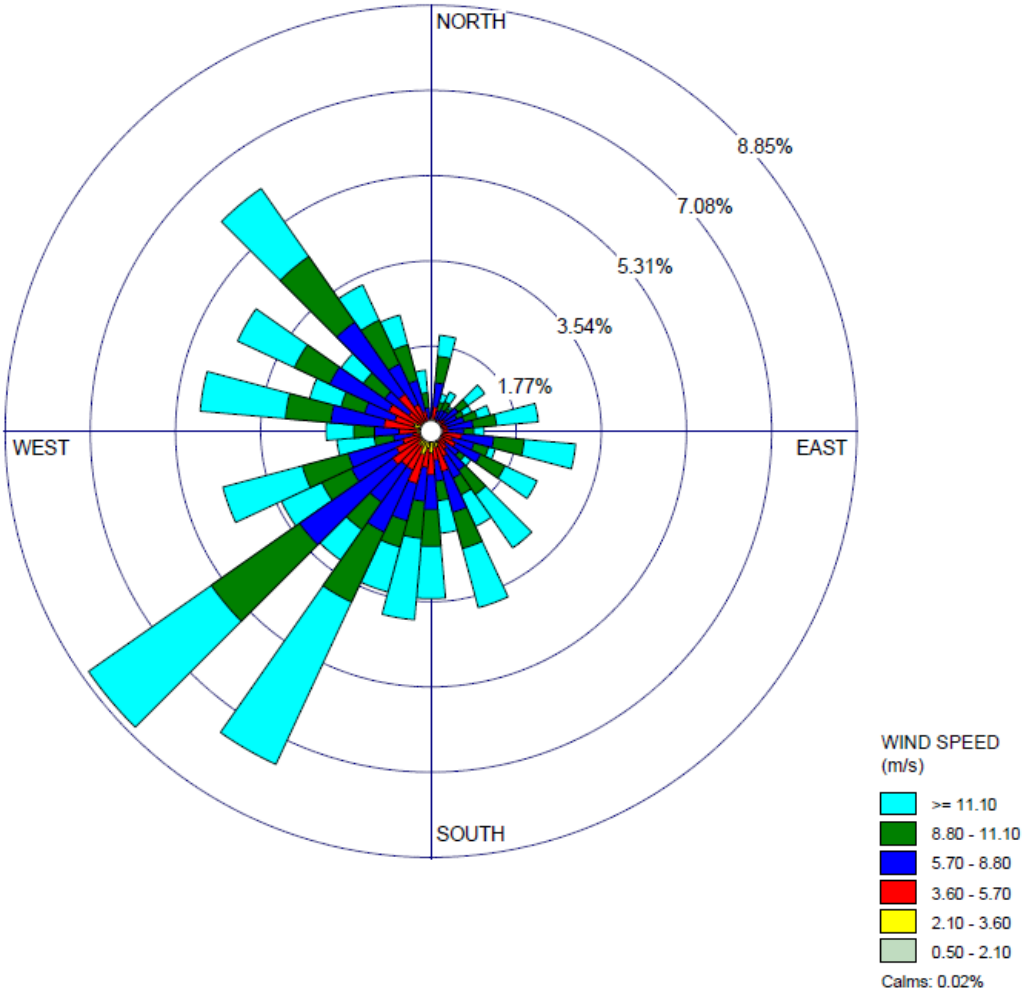
A windrose diagram was completed to determine the potential influence of wind direction and speed on airborne dust particles, shown in Figure 3-4 below. The meteorological data consisted of five years of data (2019-2023 inclusive). Due to its relative proximity to the Proposed Development, the windrose taken from Cork Airport was determined to be representative of conditions at the Site. The average wind speed recorded over the period is 9.78m/s (2019-2023). The prevailing wind direction is from the southwest, and therefore, receptors located to the northeast have increased sensitivity to the effects of dust from the Proposed Development. Table 3-5 below summarises the rainfall and wind speed data from the meteorological station.

Table 3-5: Cork Airport Met Data 2019-2023

Year	Wind Speed (m/s)	Total Precipitation
2019	9.88	1264.1
2020	10.35	1407.0
2021	9.34	1244.4

Year	Wind Speed (m/s)	Total Precipitation
2022	9.64	1150.7
2023	9.71	1527.3
Average Wind Speed/Total Precipitation	9.78	6593.5

Figure 3-4: Wind Rose for Cork Airport between 2019-2023



4 IMPACT ASSESSMENT

4.1 Construction Risk Assessment Dust

According to the IAQM Guidelines, construction activities should be divided into four types of activities (demolition, earthworks, construction, and track-out) to reflect their potential impacts [1]. Table 4-1 below outlines the definition of these activities for the purpose of the risk assessment.

Table 4-1: Classification of Residual Source Emissions

Activities	Definition
Demolition	Any activity involved with the removal of an existing structure (or structures). This may also be referred to as deconstruction, specifically when a building is to be removed a small part at a time
Earthworks	Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc.
Trackout	Covers the process of soil stripping, ground levelling, excavation, and landscaping.
Construction	The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy goods vehicles (HGVs) leave the construction / demolition site with dust materials, which may then spill onto the road, and/or when HGVs transfer dust and dirt onto the road having travelled over muddy ground onsite.

Construction activities can be divided into four types (demolition, earthworks, construction and trackout) to reflect their potential impacts. These activities were rated based on their potential dust emission magnitude (small, medium, large) [1].

Below presents the predicted activities for the Construction Phase and the associated dust emission magnitude:

- **Earthworks:** The Proposed Development has an estimated excavation volume of 15,000m^3 of material over >1ha Site. The dominant material to be excavated consists of soils and small stone. It is estimated that 6-8 heavy earth-moving vehicles are anticipated to be operational at any one time when compared to similar developments. The estimated dust emission magnitude from these factors was therefore determined as **Medium**;
- **Trackout:** Due to the estimated number HGVs travelling per day (30) traversing over 50-100m of unpaved road the dust emission magnitude for trackout activities has been determined as **Medium**; and,
- **Construction:** It is estimated that a total building area of ca. 10,000m^2 and a building volume of ca. 25,000-500,000m^3, based on similar developments. No onsite concrete batching or crushing will occur onsite. Dust emission magnitude for construction activity has been determined as **Medium**.

The sensitivity of the area (high, medium, low) was determined in accordance with IAQM Guidelines. The following effects are considered when assessing the sensitivity of area:

- Sensitivity of people to dust soiling; and,
- Sensitivity of human health to the effects of PM10 exposure.

When determining the sensitivity of the area, the IAQM gives guidelines for assessing the sensitivity of the individual receptors. For each individual receptor, the sensitivity is determined through a combination of the number of receptors expected to be impacted and the distance of the receptors to the source of emissions.

- Out of the eight human receptors identified, six were classified as having a Low sensitivity to dust soiling, and two (SR02 & SR07) was classified as having a high sensitivity to dust soiling; and,
- As per the IAQM Guidelines [1], the highest sensitivity rating considered for all receptors reflects the sensitivity of the area, and therefore, the rating of the area is determined as High for dust-soiling effects.

To assess the sensitivity of individuals to potential PM_{10} exposure from construction activities, the sensitivity threshold identified in the IAQM Guidance was utilised. The sensitivity categorisation includes background concentrations for the area, established as 14.92µg/m^3 for PM_{10} (Section 3.2 above). In summary:

- All eight receptors identified were classified as having a Low sensitivity to PM_{10} exposure; and,
- Based on the IAQM Guidance, the highest sensitivity rating from an individual receptor is used to estimate the sensitivity of the area conservatively. Therefore, the sensitivity of the area to potential PM_{10} exposure is classified as Low.

To identify the risk of impacts from dust emissions with no mitigation measures implemented, the dust magnitude and sensitivity of the area are used to determine the risk of impact for each activity during the construction phase of the Proposed Development:

- Risk of dust soiling due to trackout is Medium Risk;
- Risk of dust soiling due to construction is Medium Risk;
- Risk of dust soiling due to earthworks is Medium Risk;
- Risk of PM_{10} exposure due to trackout is Low Risk;
- Risk of PM_{10} exposure due to construction is Low Risk; and,
- Risk of PM_{10} exposure due to earthworks is Low Risk.

From the above, unmitigated construction phase activities from the Proposed Development have a Medium Risk of causing dust-soiling effects on surrounding sensitive receptors and a Low Risk of causing PM10 exposure effects on these receptors. As such, mitigation will be proposed to limit these effects on receptors.

4.2 Road Traffic Impact Assessment

Based on TII guidance [4], the southbound Sarsfield Road traffic is the only traffic link scoped into the assessment, with 17 identified sensitive receptors (see Section 3.4 above) within 200m of the potential impact area. HGV traffic comprises 48 AADT from the overall 1310 AADT. The sensitive receptor results from the TII model are shown in Table 4-2 below.

The background concentrations used for a worst-case assessment are:

- NO_2 - 18.2µg/m^3 (45.5% of EU Annual AQS and 182% WHO AQG);

- PM_{10} - 14.92µg/m^3 (37.3% of EU Annual AQS and 99.5% WHO AQG); and,
- $PM_{2.5}$ - 10.02µg/m^3 (50.1% of EU Annual AQS and 200% WHO AQG).

Table 4-2: Predicted Increase in Pollutants at Sensitive Receptors

Sensitive Receptor	Increase from Proposed Development Pollutant Concentrations (µg/m^3)			% Increase in Concentration					
				AQS			AQG		
	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
SR01	0.04	0.04	0.02	0.100%	0.100%	0.100%	0.400%	0.267%	0.400%
SR02	0.01	0.01	0*	0.025%	0.025%	0.000%	0.100%	0.067%	0.000%
SR03	0.01	0.01	0*	0.025%	0.025%	0.000%	0.100%	0.067%	0.000%
SR04	0.04	0.03	0.02	0.100%	0.075%	0.100%	0.400%	0.200%	0.400%
SR05	0.01	0.01	0*	0.025%	0.025%	0.000%	0.100%	0.067%	0.000%
SR06	0.01	0.01	0.01	0.025%	0.025%	0.050%	0.100%	0.067%	0.200%
SR07	0.1	0.1	0.06	0.250%	0.250%	0.300%	1.000%	0.667%	1.200%
SR08	0.1	0.1	0.05	0.250%	0.250%	0.250%	1.000%	0.667%	1.000%
SR09	0.1	0.09	0.05	0.250%	0.225%	0.250%	1.000%	0.600%	1.000%
SR10	0.09	0.08	0.05	0.225%	0.200%	0.250%	0.900%	0.533%	1.000%
SR11	0.05	0.05	0.03	0.125%	0.125%	0.150%	0.500%	0.333%	0.600%
SR12	0.04	0.04	0.02	0.100%	0.100%	0.100%	0.400%	0.267%	0.400%
SR13	0.03	0.03	0.02	0.075%	0.075%	0.100%	0.300%	0.200%	0.400%
SR14	0.02	0.02	0.01	0.050%	0.050%	0.050%	0.200%	0.133%	0.200%
SR15	0.01	0.01	0.01	0.025%	0.025%	0.050%	0.100%	0.067%	0.200%
SR16	0.01	0.01	0*	0.025%	0.025%	0.000%	0.100%	0.067%	0.000%
SR17	0.08	0.08	0.04	0.200%	0.200%	0.200%	0.800%	0.533%	0.800%

*Concentration is smaller than the lowest output concentration of the TII tool – (0.01µg/m^3)

Utilising the TII criteria presented in Table 2-3, the significance of the increases relative to the EU and WHO thresholds can be assessed. See Table 4-3 below.

Table 4-3: Assessment of Significance for Predicted Increases to Annual AQS & AQG

Sensitive Receptor	EU Annual AQS			WHO Annual AQG		
	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
SR01	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR02	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR03	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR04	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR05	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR06	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR07	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR08	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR09	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR10	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR11	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR12	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR13	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR14	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR15	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR16	Neutral	Neutral	Neutral	Moderate	Slight	Moderate
SR17	Neutral	Neutral	Neutral	Moderate	Slight	Moderate

The percentage change in concentration relative to the EU AQS is less than 1% for all pollutants at all sensitive receptors. As such, based on background concentrations, the air quality impacts arising from increased road traffic are considered not significant at the sensitive receptors, including those within the completed Proposed Development.

When considering the long-term WHO AQGs, however, slight negative impacts are predicted for PM_{10} and moderate impacts are predicted for NO_2 and $PM_{2.5}$. However, the percentage change in concentration relative to the EU AQS is less than 2% for all pollutants at all sensitive receptors, placing the increases within the lowest category for percentage change available within the TII assessment of significance. The controlling factor for this is high background concentrations close to (PM_{10}) or well in exceedance of the AQG (NO_2 and $PM_{2.5}$), likely linked to the high AADT of the N40, which is approximately 60 times the predicted AADT increase from the Proposed Development. Without intervention, maintaining current background concentrations will surpass WHO AQG by 2030.

It should be noted that the results are derived from a worst-case scenario based on the following assumptions:

- The reference LRD has dedicated parking bays for each residence, whereas, as described in Section 5.2 below, Proposed Development has a 1:16 ratio per residence. As such the reference LRD will be able to accommodate greater numbers of personal vehicles and generate higher AADT than the Proposed Development, meaning the utilised AADT represents an overestimate;
- The HGV make-up of road traffic is estimated at 3.7%, to align with figures for the nearest available data from the South Ring Road. As traffic will be sourced from a residential development, this is considered an overestimation;
- Background concentrations derived from a one/two-month monitoring period is comparable to annual average concentrations;
- Background concentrations derived from monitoring are assumed to be the highest detected concentrations;
- Background concentrations for NO_2 are assumed to be comparable to the higher NO_x concentration due to the interconversion of NO and NO_2; and,
- Background concentrations will not decrease from the assumed values between now and the completion date of the Proposed Development.

5 MITIGATION MEASURES

5.1 Construction Dust

Based on the IAQM guidance [1], the following mitigation measures, shown in Table 5-1, are recommended to address the risk of impacts arising from construction phase activities on sensitive receptors.

Table 5-1: General Construction Phase Mitigation Measures

General Mitigation Measures
Site Management • The complaints log will be made available to Cork City Council 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; and, • Records of any dust complaints will be made with the appropriate/timely action taken when as required.
Monitoring • Regular inspections will be carried out around the boundary of the Site; and, • An increase the frequency of inspections will be undertaken during either high dust generating activity or during prolonged dry or windy conditions particularly in the case of earthworks.
Site Preparation: • Avoid site runoff of water or mud as far as practicable; • Dusty materials that are to be used onsite but are temporarily stored will be covered; • Erect barriers around the Site, where possible; • Keep fencing, barriers and/or scaffolding clean and free of dust; • Remove materials that have the potential to produce dust from Site as soon as possible unless being re-used on site. If being used on-site cover or wetted to prevent wind whipping; • Plan Site layout so that dust generating activities will be located away from receptors, as far as is possible; and, • Cover or fence stockpiles to prevent wind whipping.
Operating vehicles: • The use of diesel- or petrol-powered generators will be avoided, where possible; and, • Vehicle engines will be switched off when stationary - no-idling.
Operations: • Use cutting, grinding, or sawing equipment fitted with suitable dust suppression techniques such as water sprays; • Ensure there will be a water supply onsite for the suppression of dust capable of reaching all parts of the Site; • Ensure equipment will be available in the event of any dry spillages and clean up as soon as practicable; and, • Minimise drop heights from handling equipment will be implemented across all activities.
Waste Management: • No burning of waste will be permitted onsite.

General Mitigation Measures
Activity-Specific Mitigation Measures
Construction • Ensure sand and other aggregates are stored in enclosed or bunded areas unless required for a particular purpose; • Avoid Scabbing (roughening of concrete surfaces); and, • Ensure bulk cement or other dried powder materials are delivered in enclosed trucks.
Earthworks • Stabilise any stockpiles as soon as possible.
Track-out • Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport; • Avoid dry sweeping of large areas; and, • Record all inspections of haul routes any actions taken in a site log book.

5.2 Operational Road Traffic

Design measures within the Proposed Development will limit the effects on air quality arising from traffic generated by encouraging alternative or electrified transit or through the sharing of vehicles:

- Cycle parking for the residential elements of the development will be provided in accordance with the Cork City Development Plan standards. Additional cycle facilities, such as e-bikes and cargo bikes, will also be provided as part of the overall development. It is proposed that 503 cycle parking should be included. The proposed development will have an approximate ratio of 1.5 cycle spaces per apartment. The proposed cycle parking will be in excess of the maximum cycle parking requirement as set out in Table 11.14 of the CDP;
- A minimum of 30% of car parking spaces (44) will have EV charge facilities. The appropriate infrastructure for future provision of additional EV charging facilities will also be provided. This is in excess of the CDP minimum standards but is in line with Climate Action Plan targets for private car fleet electrification. As this is a mainly residential development, the preference is that most of these charge facilities will be slower (domestic) charges that will enable overnight charging to occur;
- A car parking management strategy is proposed:
    - 16 houses will each be allocated a dedicated car parking space, which will be individually assigned;
    - Up to 4 car parking spaces will be assigned to the creche and where required childcare staff can be assigned these spaces if required. These spaces will be required to display a valid permit issued by the management company;
    - Car share facility spaces will be provided for the residents who have an occasional need to use a car. These will be accessible to all residents and also to local residents in the area who may wish to use the car share scheme; and,

- The overall use of the car parking will be monitored through the Mobility Management Plan ('MMP') process, and if deemed necessary, car parking spaces can be reduced over time and reallocated to other travel modes.

However, as noted in Section 4.2, the controlling factor for impacts is the elevated background concentrations, likely linked to high traffic counts on the N40 road. Measures to improve air quality in Cork City are detailed within the Cork City Council's Air Quality Strategy 2021-2026 but have broader implications on background air quality:

- Changes to the arrangement of the city centre, such as the phasing in of non-vehicular roads, pedestrianisation and speed limit reduction, may improve air quality within the city centre; however, they could direct displaced traffic into the surrounding road network, including the Sarsfield Road and N40 and may limit improvements to air quality in these areas;
- Improving the accessibility of public transit both financially and by providing additional routes, cycling and working from home could reduce reliance and usage of fuelled vehicular travel and lead to improvements in air quality; and,
- Supporting the electrification of private vehicles through the construction of EV charging infrastructure will likely lead to improvements in air quality.

Other measures to improve air quality by tackling road traffic in the vicinity of the Site include:

- Reducing speed limits on the surrounding roads; and,
- Reduce the need for travel by providing amenities locally.

6 CONCLUSIONS

The core conclusions in relation to this assessment of air quality are:

- Construction Phase activities from the Proposed Development have a Medium Risk of resulting in dust-soiling effects arising on surrounding sensitive receptors and have a Low Risk of resulting in PM_{10} exposure effects arising on surrounding sensitive receptors;
- To limit impacts arising from construction activities, mitigation measures will be implemented as detailed in section 5.1 above;
- Effects arising from the Construction Phase plant and HGVs emissions were screened out due to low numbers, in accordance with guidance thresholds and recommendations;
- Effects arising from Operational Phase traffic were based on comparison to another development:
    - Predicted northbound traffic increases (561 AADT) on the Sarsfield Road and the southern road links connected to the southbound Sarsfield Road are below the relevant threshold (>1000 AADT change) in TII guidance, and as such, impacts to air quality arising from these road links are considered not significant and can be screened out under this guidance; and,
    - Predicted southbound traffic increases (1310 AADT) on the Sarsfield Road are above the relevant threshold (>1000 AADT) in TII guidance, and as such, impacts to air quality at sensitive receptors from traffic was assessed using the TII tool. 17 sensitive receptors were identified to be within the relevant screening distance (200m) of this road link, including a receptor (SR17) representing the residents of a completed version of the Proposed Development.
- Predicted increases from the TII tool in concentration at sensitive receptors ranged between:
    - 0.25% – 0.025% of the EU AQS for NO_2;
    - 0.25% – 0.025% of the EU AQS for PM_{10};
    - 0.3% – 0.0% of the EU AQS for $PM_{2.5}$;
    - 1.0% – 0.1% of the WHO AQG for NO_2;
    - 0.67% – 0.067% of the WHO AQG for PM_{10}; and,
    - 1.2% – 0.0% of the WHO AQG for $PM_{2.5}$.
- However, these increases are overestimated – see section 4.2;
- The impacts arising from predicted increases in concentration compared to the legislative AQS for each pollutant were “Neutral”. The impacts arising from predicted increases in concentration compared to the WHO guidelines for 2030 for PM_{10} was “Slight” and for NO_2 and $PM_{2.5}$ “Moderate”;
- Future air quality for residences/amenities in and around the Proposed Development will meet EU AQS following construction. However, if elevated existing background concentrations are maintained, WHO AQG will be surpassed without the construction of the Proposed Development; and,
- Mitigation measures for the Operational Phase of the Proposed Development include:

- Design measures (provision of EV charging points, parking for cycles, limited parking) within the Proposed Development will limit the effects on air quality arising from traffic generated by it by encouraging alternative or electrified transit; and,
- Implementation of the Cork City Council Air Quality Strategy 2021 – 2026 could reduce the air quality effects arising from existing and future traffic within Cork City and lower background concentrations surrounding the Proposed Development.

7 REFERENCES

[1] Institute of Air Quality Management, IAQM, “Guidance on the Assessment of Dust from Demolition and Construction - Version 2.2,” IAQM, January 2024.

[2] EPA, “Air Quality in Ireland (Key Indicators of Ambient Air Quality) – Annual Report 2022,” EPA, Wexford, 2023.

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[10] EPA, “Air Dispersion Modelling Guidance Note (AG4) 2020,” Environmental Protection Agency, Wexford, 2020.

APPENDICES

APPENDIX A

March 2025

Construction Dust Risk Assessment

Large-Scale Residential Development at LDA Wilton, Sarsfield Road, Cork

On behalf of

The Land Development Agency

MALONE O'REGAN ENVIRONMENTAL

QUALITY ISO 9001:2008 NSAI Certified

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MALONE O'REGAN ENVIRONMENTAL

Ground Floor – Unit 3
Bracken Business Park
Bracken Road, Sandyford
Dublin 18, D18 V32Y
Tel: +353- 1- 567 76 55
Email: enviro@mores.ie

Title: Construction Dust Risk Assessment, Large-Scale Residential Development at LDA Wilton, Sarsfield Road, Cork, The Land Development Agency

Job Number: E2170

Prepared By: Damien Teague **Signed:** Damien Teague

Checked By: Klara Kovacic **Signed:** Klara Kovacic

Approved By: Klara Kovacic **Signed:** Klara Kovacic

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Construction Dust Risk Assessment

Large-Scale Residential Development at LDA Wilton, Sarsfield Road, Cork

The Land Development Agency

Contents

TABLES

1 CONSTRUCTION DUST RISK ASSESSMENT

The following appendix outlines the construction dust risk assessment matrix employed by the Institute of Air Quality Management ('IAQM') [1]. The following steps were carried out relating to the Construction Phase of the Proposed Development.

1.1 Step 2A Define Potential Dust Emission Magnitude

Table 1-1: Sensitivity of the Area to Dust Soiling Effects on People and Property

Dust Emission Magnitude:	Demolition: Examples of works associated with each emission magnitude	Earthworks: Examples of works associated with each emission magnitude	Construction: Examples of works associated with each emission magnitude	Trackout: Examples of works associated with each emission magnitude
Large	Total building volume >75,000m^3, potentially dusty construction material (e.g. concrete), onsite crushing and screening, demolition activities >12 m above ground level.	Total site area >110,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth-moving vehicles active at any one time, formation of bunds >6m in height.	Total building volume >75,000m^3 on-site site concrete batching, sandblasting.	>50 HDV (>3.5t) outward movements[1] in any one day[2], potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
Medium	Total building volume 12,000m^3 – 75,000m^{3,} potentially dusty construction material, demolition activities 6-12m above ground level.	Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earthmoving vehicles active at any one time, formation of bunds 3m - 6m in height.	Total building volume 12,000m^3–75,000m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching.	20-50 HDV (>3.5t) outward movements[1] in any one day[2], moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
Small	Total building volume <12,000m^3 construction material with low potential for dust release (e.g. metal, cladding or timber), demolition activities <6m above ground, demolition during wetter months.	Total site area <18,000m^2, soil type with large grain size (e.g. sand), <5 heavy earth-moving vehicles active at any one time, formation of bunds <3m in height.	Total building volume <12,000m^3 construction material with low potential for dust release (e.g. metal, cladding or timber.)	<20 HDV (>3.5t) outward movements[1] in any one day, surface material with low potential for dust release, unpaved road length <50m

***Notes:**

1 Denotes a vehicle movement as a one-way journey i.e. A to B and excludes the return journey.

2 Denotes HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

1.2 Dust Emission Magnitude for the Proposed Development

Table 1-2: Dust Emissions for Activities associated with the Development

Activities	Proposed Development Activities	Dust Emission Magnitude
Earthworks	• Total site area 18,000m^2 – 110,000m^2; • 6-8 heavy earth moving vehicles may be in operation at any one time; and, • Dominant material types to be moved will be soils, stones and concrete slab.	**Medium**
Construction	• Estimated total building volume of 25,000-500,000m^3. • No onsite concrete batching will occur. • Permanent and temporary fencing will be constructed where necessary.	**Medium**
Trackout	• Maximum estimated HGV outward movement is 30HGVs in any one day a during specific construction phase; and, • Estimated traveling over unpaved road is 50-100m in length.	**Medium**

2 SENSITIVITY OF THE AREA

2.1 IAQM Receptor Screening Criteria

An assessment will normally be required where there is:

- A 'human receptor' within:
  - 250m of the boundary of the site; and/or,
  - 50m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- An 'ecological receptor' within:
  - 50m of the boundary of the site; and/or,
  - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).
- For specific (high-risk) schemes, the planning authority may require dust assessment despite the proposed site falling outside the distances above.

For the purposes of this assessment, a conservative approach to sensitivity was taken, with the sensitivity defined by proximity to the Site boundary rather than the proposed location of activities. As a result, individual sensitivities for each activity were collated into an overall sensitivity for receptors.

2.2 Sensitivity Of Receptors for Dust Soiling

When determining the sensitivity of people to dust soiling, the IAQM presents general guidances and examples of high, medium and low-sensitivity receptors. The general principles under consideration are outlined in Table 2-1 below.

Table 2-1: General Principle for Defining the Sensitivity of Receptors to Dust Soiling

Sensitivity Rating to Dust Soiling	General Principles Associated with Sensitivity Rating
Low	• The enjoyment of amenity would not reasonably be expected; • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or, • There is transient exposure, where the people or property would reasonably be expected to be present for limited periods of time as part of the normal pattern of use of the land.
Medium	• Users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home; • The appearance, aesthetics or value of the property could be diminished by soiling; or, • The people or property would not reasonably be expected to be present continuously or at least regularly for extended periods, as part of the normal pattern of use of land.
High	• Users can reasonably expect enjoyment of a high level of amenity; • The appearance, aesthetics or value of the property would be diminished by soiling; or,

Sensitivity Rating to Dust Soiling	General Principles Associated with Sensitivity Rating
	• The people or property would reasonably be expected to be present continuously or at least regularly for extended periods, as part of the normal pattern of use of the land.

2.2.1 Define the Sensitivity of the Area to Dust Soiling Effects

Table 2-2: Defining the 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
Medium	>1	Medium	Low	Low	Low
Low	<1	Low	Low	Low	Low

2.2.2 Sensitivity of the Area Associated to Dust Soiling with the Proposed Development

Table 2-3: Sensitivity of the Area Associated with the Proposed Development

Receptor ID	Receptor Sensitivity	Distance to Nearest applicable boundary	Orientation to Site Boundary	Number of receptors expected to be impacted	Sensitivity Rating for Dust Soiling	Reason for Receptor Sensitivity
SR01	High	ca.146m	Southeast	1-10	Low	Distance and number of receptors associated with the receptors justified sensitivity rating.
SR02	High	ca.49.0m	East	>100	High	Distance and number of receptors associated with the receptors justified sensitivity rating.
SR03	High	ca.133m	Northeast	>100	Low	Distance and number of receptors associated with the receptors justified sensitivity rating.
SR04	Medium	ca.55.3m	North	>1	Low	Distance and number of receptors associated with the

Receptor ID	Receptor Sensitivity	Distance to Nearest applicable boundary	Orientation to Site Boundary	Number of receptors expected to be impacted	Sensitivity Rating for Dust Soiling	Reason for Receptor Sensitivity
						receptors justified sensitivity rating.
SR05	High	ca.150m	North	>100	Low	Distance and number of receptors associated with the receptors justified sensitivity rating.
SR06	High	ca.102m	Northwest	>100	Low	Distance and number of receptors associated with the receptors justified sensitivity rating.
SR07	High	ca.17.4m	West	>100	High	Distance and number of receptors associated with the receptors justified sensitivity rating.
SR08	Low	ca.61.6m	South	<1	Low	Distance and number of receptors associated with the receptors justified sensitivity rating.

2.3 Sensitivity to PM_{10} Exposure

Table 2-4 outlines the criteria to assess the sensitivity of people to the health effects of PM_{10}. In short, the criteria are based on whether a receptor is likely to be exposed to elevated concentrations of PM_{10} over 24 hours and utilises the background concentrations of PM_{10} as part of the assessment. Table 2-5 below shows the general conditions when considering the sensitivity of the receptors to PM_{10} exposure. Table 2-6 below shows the sensitivity of the receptors to PM_{10} exposure from the Proposed Development.

Table 2-4: General Principles for Defining the Sensitivity of Receptors to PM_{10} Exposure

Sensitivity Rating to Human Health Impacts	General Principles Associated with Sensitivity Rating
Low	Locations where human exposure is transient
Medium	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24hr objectives, a relevant location would be one where individuals may be exposed for eight hours or more per day)

Sensitivity Rating to Human Health Impacts	General Principles Associated with Sensitivity Rating
High	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24hr objectives, a relevant location would be one where individuals may be exposed for eight hours or more per day)

The background PM_{10} concentrations utilised for the purposes for this assessment are an average of the PM_{10} air monitoring that occurred between 11th December 2024 – 26th February in the vicinity of the Proposed Development. The resulting background concentrations is 14.92µg/m^3.

2.3.1 Define the Sensitivity of People to Health Effects of PM_{10}

Table 2-5: Sensitivity criteria for the health effects of PM_{10}

Receptor Sensitivity	Annual Mean PM_{10} Concentration	No. of Receptors	Distance from Source (m)			
			<20	<50	<100	<200
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

2.3.2 Sensitivity of human receptors to PM_{10} exposure from the proposed Development

Table 2-6: Sensitivity of human receptors to PM_{10} exposure from the Proposed Development

SR ID	Receptor Sensitivity	Annual Mean PM_{10} Conc. ($\mu g/m^3$)	Distance to Nearest applicable boundary (m)	Orientation to Site Boundary	No. of receptors expected to be impacted	Receptor Sensitivity Rating for PM_{10}	Description of receptor
SR01	High	14.92	ca.146m	Southeast	1-10	Low	Proxy for residential houses to the southeast
SR02	High	14.92	ca.49.0m	East	>100	Low	Proxy for residential houses to the east
SR03	High	14.92	ca.133m	Northeast	>100	Low	Proxy for residential houses to the northeast
SR04	Medium	14.92	ca.55.3m	North	1-10	Low	Proxy for Wilton Shopping Centre and Car Parks to the north
SR05	High	14.92	ca.150m	North	>100	Low	Proxy for St. Josephs Church, Bishopstown Library and SMA Community Centre to the north
SR06	High	14.92	ca.102m	Northwest	>100	Low	Proxy for Bru Columbanus Non-Profit and Gaelscoil Uí Riada to the northwest
SR07	High	14.92	ca.17.4m	West	>100	Low	Proxy for residential houses to the west
SR08	Low	14.92	ca.61.6m	South	≥1	Low	Proxy for ESB facility to the south

3 DEFINE THE RISK OF IMPACT

3.1 Defining the Risk Matrix for Earthworks Activities

Table 3-1: Risk Matrix- Earthworks Activities

Receptor Sensitivity	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

3.2 Defining the Risk Matrix for Construction Activities

Table 3-2: Risk Matrix- Construction Activity

Receptor Sensitivity	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

3.3 Defining the Risk Matrix for Trackout Activities

Table 3-3: Risk Matrix- Trackout Activities

Receptor Sensitivity	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

4 RISK OF IMPACT ASSOCIATED WITH THE PROPOSED DEVELOPMENT

4.1 Potential Dust Soiling Impacts

Table 4-1: Sensitivity of Human Receptors to Dust Soiling from Earthworks Activities

Sensitivity of the Area	Dust Emission Magnitude Category	Risk of Impact from Earthworks
High	Medium	Medium Risk

Table 4-2: Sensitivity of Human Receptors to Dust Soiling from Construction Activities

Sensitivity of the Area	Dust Emission Magnitude Category	Risk of Impact from Construction
High	Medium	Medium Risk

Table 4-3: Sensitivity of Human Receptors to Dust Soiling from Trackout Activities

Sensitivity of the Area	Dust Emission Magnitude Category	Risk of Impact from Trackout
High	Medium	Medium Risk

4.2 Potential PM_{10} Exposure Impacts

Table 4-4: Sensitivity of Human Receptors to PM_{10} Exposure from Earthworks Activities

Sensitivity of the Area	Dust Emission Magnitude Category	Risk of Impact from Earthworks
Low	Medium	Low Risk

Table 4-5:Sensitivity of Human Receptors to PM_{10} Exposure from Construction Activities

Sensitivity of the Area	Dust Emission Magnitude Category	Risk of Impact from Construction
Low	Medium	Low Risk

Table 4-6: Sensitivity of Human Receptors to PM_{10} Exposure from Trackout Activities

Sensitivity of the Area	Dust Emission Magnitude Category	Risk of Impact from Trackout
Low	Medium	Low Risk

5 REFERENCES

[1] IAQM, “Guidance on the Assessment of Dust from Demolition and Construction,” 2024.