8 AIR QUALITY

8.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) assesses the impact on air quality associated with the construction and operational phases of a Large-scale Residential Development (LRD) at a site located at Boherboy, Saggart, County Dublin (hereafter referred to as the Proposed Development).

In terms of potential air quality impacts, the Proposed Development has the potential to give rise to construction dust impact during the construction stage. During the operation of the Proposed Development, there is the potential for air quality impact due to associated road traffic movements and space heating emissions.

The assessment has been carried out according to best practice standards and guidelines relating to air quality and is based on a reasonable worst-case scenario with respect to potential air quality effects arising from the construction or operation of the Proposed Development.

8.1.1 Quality Assurance and Competency of Experts

This Air Quality Impact Assessment has been prepared by Olivia Maguire, a senior consultant with AONA Environmental Consulting Ltd. Olivia's areas of professional expertise are in air quality and odour impact assessment and mitigation design as well as Health and Safety consultancy. Olivia is a Member of Institute of Environmental Management and Assessment (IEMA) and a Member of Occupational Hygiene Society of Ireland with a B.Sc. Occupational Safety and Health, M.Sc. Environmental Science, B.Sc. (Hons) Geography, and is a qualified ISO 14001: Lead Environmental Auditor. Olivia has in excess of 20 years of professional expertise in environmental consultancy.

This Air Quality Impact Assessment has been reviewed by Mervyn Keegan of AONA Environmental Consulting Ltd. Mervyn Keegan is a Director of the environmental consultancy, AONA Environmental Consulting Ltd. Mervyn Keegan's areas of professional expertise are in noise control and acoustics and air quality and odour consultancy, including impact assessment and mitigation design. Mervyn Keegan has in excess of 25 years of environmental consultancy experience. Mervyn is a member of the Institute of Acoustics, a member of the Institute of Environmental Sciences and a member of the Institute of Air Quality Management with a Bachelor of Science Degree (Applied Sciences), a Master of Science Degree (Environmental Science) and a Diploma in Acoustics in Noise Control. AONA Environmental Consulting Ltd. is an independent consultancy specialising in Environmental Impact Assessment and Licensing. Mervyn Keegan has prepared in excess of fifty noise and vibration and air quality and Climate impact assessments annually for infrastructure, transport, industry, commercial and quarry developments in the Republic of Ireland, Northern Ireland and the UK in the last 20 years and is an expert in the awareness and understanding of the relevant legislation and guidance that pertains to best practice in such assessments. Mervyn Keegan has appeared as an Expert Witness at oral hearings, public inquiries and legal hearings.

8.2 Study Methodology

The approach to the air quality impact assessment has been as follows;

- A review of available published ambient air monitoring data relevant to the wider area in proximity to the Proposed Development has been undertaken;
- A review of the most applicable standards and guidelines has been reviewed in order to define the air quality significance criteria for the Construction and Operational Phases of the Proposed Development;
- An assessment of the likely Construction Phase air quality impacts has been undertaken at the nearest sensitive locations to the proposed construction work areas associated with the Proposed Development;
- An assessment of the likely Operation Phase air quality impacts associated with any altered traffic flows due to the Proposed Development for the future residents of the Proposed Development and at the most sensitive nearest locations; and
- A recommendation of appropriate mitigation measures has been outlined where required, to reduce Construction Phase and / or Operation Phase air quality impacts, where any identified potential air quality impacts associated with the Proposed Development.

8.2.1 Relevant Guidelines, Policy and Legislation

8.2.1.1 Legislation

Specific legislation relating to air quality which has been considered within this chapter of the EIAR includes:

- Air quality Standards Regulations 2011 (S.I. No. 180 of 2011) as amended;
- Ambient Air quality Standards Regulations 2022 (S.I. No. 739 of 2022);
- EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU);
- Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008 on ambient air quality and cleaner air for Europe;
- Directive 2024/2881 of the European Parliament and of the Council of 23rd October 2024 on ambient air quality and cleaner air for Europe (recast);
- World Health Organisation (WHO) global air quality guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide Update 2021 (WHO Air quality Guidelines, WHO 2021).

8.2.1.2 Ambient Air Quality Standards

The Ambient Air quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) was transposed into Irish legislation by the Air quality Standards Regulations 2011 (S.I. No. 180 of 2011). The Directive (2004/107/EC) was transposed into Irish legislation by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009).

The European Union (EU) air quality standards and objectives set out in the ambient air quality directives 2008/50/EC and 2004/107/EC[1] have been revised in the Directive 2024/2881 of the European Parliament and of the Council of 23rd October 2024 on ambient air quality and cleaner air for Europe (recast).

The revised EU Ambient Air quality Directive, which entered into force on 10th December 2024, tightens restrictions on a number of key air pollutants which have been demonstrated to be harmful to human health. Directive 2024/2881 brings the limit on harmful pollutants closer to those recommended by the World Health Organisation (2021). This directive has to be implemented in national regulation on 11th December 2026, at the latest and member states must meet the new air quality standards by 2030.

The EU Commission will adopt secondary legislation (implementing acts) to complement the new rules and assist with their application. In the interim period, before 2030, the 2008 limit and target values will continue to apply and Member States are permitted to introduce more stringent requirements.

The revised EU Ambient Air Quality Directive updates air quality standards, lowering the allowable levels for twelve air pollutants: particulate matter ($PM_{2.5}$ and PM_{10}), nitrogen dioxide (NO_2), nitrogen oxides (NOx), sulphur dioxide (SO_2), ozone (O_3), carbon monoxide, benzene, benzo(a)pyrene, arsenic, cadmium, nickel and lead. Error! Reference source not found. sets out the relevant limit values specified by the Air quality Regulations.

The Environmental Protection Agency (EPA) is the competent authority for the purpose of Directive 2008/50/EC and the revised Directive 2024/2881 and corresponding Regulations. These Regulations also provide for the dissemination of public information, including information on any exceedances of the target values, the reasons for the exceedances, the area(s) in which they occurred and appropriate information regarding effects on health and impact on the environment. Table 8-8-1 sets out the relevant limit values specified by the Air Quality Regulations.

Table 8-8-1: EU Air Quality Standards

Pollutant	Limit Value Objective	Average Period	Air quality Limit Values	
			Current EU 2008 Limit Values (µg/m^3)	EU 2024 Limit Values((Limit values for the protection of human health to be obtained by 1st January 2030) (µg/m^3)
NO_2	Protection of human health	Annual mean	40 µg/m^3	20 µg/m^3
		Daily Mean	-	50 µg/m^3 (not to be exceeded >18 times per calendar year)
		1 hour	200 µg/m^3 (not to be exceeded >18 times per calendar year)	200 µg/m^3 (not to be exceeded >3 times per calendar year)

[1] https://environment.ec.europa.eu/topics/air/air-quality_en - law

Pollutant	Limit Value Objective	Average Period	Air quality Limit Values	
			Current EU 2008 Limit Values ($\mu g/m^3$)	EU 2024 Limit Values((Limit values for the protection of human health to be obtained by 1st January 2030) ($\mu g/m^3$)
NOx	Protection of ecosystems	Annual mean	30 $\mu g/m^3$	30 $\mu g/m^3$
PM_{10}	Protection of human health	Annual Mean	40 $\mu g/m^3$	20 $\mu g/m^3$
		Daily Mean	-50 $\mu g/m^3$ (allowed to be exceeded 35 times per year	45 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
$PM_{2.5}$	Protection of human health	Annual Mean	20 $\mu g/m^3$	10 $\mu g/m^3$
		Daily Mean	-	25 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
SO_2	Protection of human health	Annual Mean	-	20 $\mu g/m^3$
		Daily Mean	125 $\mu g/m^3$ (not to be exceeded >3 times per calendar year)	50 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
		One Hour	350 $\mu g/m^3$ (not to be exceeded >24 times per calendar year)	350 $\mu g/m^3$ (not to be exceeded >3 times per calendar year)
	Protection of vegetation	Calendar year	20 $\mu g/m^3$	20 $\mu g/m^3$
	Protection of vegetation	1 Oct to 31 Mar	20 $\mu g/m^3$	20 $\mu g/m^3$
Lead	Protection of human health	Annual Mean	0.5 $\mu g/m^3$	0.5 $\mu g/m^3$
Carbon Monoxide	Protection of human health	8 hours	10 $\mu g/m^3$	10 $\mu g/m^3$
		Daily Mean	-	4 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
Benzene	Protection of human health	Annual Mean	5 $\mu g/m^3$	3.4 $\mu g/m^3$
Ozone (O_3)	Protection of human health	Daily Mean	120 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)	100 $\mu g/m^3$ (not to be exceeded >3 times per calendar year)
Arsenic (As)	Protection of human health	Annual Mean	6 ng/m^3	6 ng/m^3
Cadmium (Cd)	Protection of human health	Annual Mean	5 ng/m^3	5 ng/m^3

Pollutant	Limit Value Objective	Average Period	Air quality Limit Values	
			Current EU 2008 Limit Values (µg/m^3)	EU 2024 Limit Values((Limit values for the protection of human health to be obtained by 1st January 2030) (µg/m^3)
Nickel (Ni)	Protection of human health	Annual Mean	20 ng/m^3	20 ng/m^3
Polycyclic Aromatic Hydrocarbons	Protection of human health	Annual Mean	1 ng/m^3 (expressed as concentration of Benzo(a)pyrene)	1 ng/m^3 (expressed as concentration of Benzo(a)pyrene)

8.2.1.3 Policy

In May 2021, the European Commission (EC) adopted the EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' (EC, 2021), as a key deliverable of the European Green Deal (EC, 2019). The EU Action Plan sets out the zero pollution vision for 2050; *'a healthy planet for all'*, where air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment. To steer the EU towards the 2050 vision, the EU Action Plan sets out key 2030 targets to speed up pollution reduction. The targets for 2030 of this plan which are relevant to this assessment are listed as follows:

- Improving air quality to reduce the number of premature deaths caused by air pollution by 55%; and
- Reducing by 25% the EU ecosystems where air pollution threatens biodiversity.

The main objective of the EU Action Plan is to provide a compass for including pollution prevention in all relevant EU policies. Although the Action Plan states that the EU has a robust regulatory framework in place to cap ambient air pollution, the number of premature deaths and other diseases attributed to air pollution remains high. This can be attributed to the fact that some EU standards are still less stringent than the guidelines set by the World Health Organisation (WHO) in 2005 and the way the Ambient Air Quality Directives are implemented has only been partially effective.

The EU Action Plan sets out that the EU plans to adopt limits that are more closely in line with WHO guidance for air quality in 2022. This was scheduled for 2022 to allow for an anticipated WHO update to its air quality guidance. In September 2021 the World Health Organisation (WHO) updated their air quality guidelines based on the latest scientific evidence for the protection of human health and the environment (WHO, 2021). The guidelines are more stringent than the current Ambient Air Quality Standards. The guidelines are more stringent than the current Ambient Air quality Standards. WHO updates the Air quality Guidelines on a regular basis so as to ensure their continued relevance and to support a broad range of policy options for air-quality management in various parts of the world, especially taking into account the breadth of new health studies that have been published in the meantime. The 2021 update of the WHO Air quality Guidelines is in response to the real and continued threat of air pollution to public health. The WHO Air quality Guidelines recommend levels and interim targets for common air pollutants such as particulate matter ($PM_{2.5}$ and PM_{10}), O_3, NO_2, and SO_2. These are outlined in Table 8-8-2.

Table 8-8-2: Recommended 2021 WHO Air Quality Guidelines levels compared to 2005 WHO Air Quality Guidelines levels

Pollutant	Averaging Period	2005 AQGs (µg/m³)	2021 AQGs (µg/m³)
$PM_{2.5}$	Annual	10	5
	24 hours	25	15
PM_{10}	Annual	20	15
	24 hours	50	45
SO_2	24 hours	20	40
NO_2	Annual	40	10
	24 hours	-	25
O_3	Peak Season	-	60
	8 hours	100	100
CO (mg/m³)	24 hours	-	4

8.2.1.4 Guidelines

The air quality impact assessment has been undertaken with reference to the most relevant and current guidance documents relating to this Chapter of the EIAR as follows:

- Institute of Air Quality Management (IAQM) – Land-Use Planning & Development Control: Planning For Air Quality (January 2017)
- Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction (IAQM) January 2024 (Version 2.2)
- DMRB Sustainability & Environment. Appraisal *LA 105 Air quality*. DMRB LA105 Air quality (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15), (Highways Agency, 2020); and
- Department for Environment, Food and Rural Affairs (DEFRA) Air Quality Management Technical Guidance LAQM.TG (22) (August 2022).
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022);

- Transport Infrastructure Ireland, Air Quality Assessment of Specified Infrastructure Projects Overarching Technical Guidance, PE-ENV-01106 (Dec. 2022).
- Institute of Air Quality Management, A guide to the assessment of air quality impacts on designated nature conservation sites (2020)

8.2.1.4.1 Construction Dust Assessment Guidelines

Currently no Irish statutory standards or limits exist for the assessment of dust deposition and its tendency for causing nuisance. Similarly, no official air quality criterion has been set at a European or WHO level, although a range of national 'yardstick' criteria from other countries is found in literature.

The German TA Luft Regulations, "Technical Instructions on Air quality Control" (Verein Deutscher Ingenieure (VDI) 2002) state that total dust deposition (soluble and insoluble, measured using Bergerhoff type dust deposit gauges as per German Standard Method for determination of dust deposition rate, VDI 2119) should not exceed a dust deposition rate of 350 mg/m^2/day (when averaged over a 30+/-2 day period). The use of this limit value is appropriate to minimise the impact of airborne dust levels on the receiving environment beyond the Proposed Development site boundary. The German TA Luft criteria for '*possible nuisance'* and *'very likely nuisance'* are 350 mg/m^2/day and 650 mg/m^2/day, respectively.

In 2005, the UK Highways Agency (Now National Highways) released an Interim Advice Note 61/05 Guidance for Undertaking Environmental Assessment of Air quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSIs (UK Highways Agency 2005) as a supplement to the Design Manual for Roads and Bridges (DMRB) Guidelines. This states that dust or particles falling onto plants can physically smother the leaves affecting photosynthesis, respiration and transpiration. The literature suggests that the most sensitive species appear to be affected by dust deposition at levels above 1,000 mg/m^2/day which is considerably greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. As such, once dust deposition rates are maintained within the guidelines for human nuisance the impact of dust deposition on sensitive ecosystems is considered negligible.

Interim Advice Note (IAN) 175/13 prepared as a supplement to the Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 of the Design Manual for Roads and Bridges also known as HA207/07) suggests that dust deposition levels above 1,000 mg/m^2/day are likely to affect sensitive ecological receptors. Annex F, Assessment of Designated Sites states "F1.5 Deposition of particles, ammonia, metals and salt will also be increased close to the road. This could affect vegetation in a number of ways: i) Dust or particles falling onto plants can physically smother the leaves affecting photosynthesis, respiration and transpiration. The literature suggests that the most sensitive species appear to be affected by dust deposition at levels above 1000 mg/m^2/day which is five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. Most species appear to be unaffected until dust deposition rates are at levels considerably higher than this." The UK Highways Agency guideline (2005) has since been updated several times. The 2005 version has not been used for 16 years. The latest guidance for 2019 no longer presents limit values for dust deposition. IAN 175/13 has been superseded by newer guidance, *DMRB LA105 Air quality*. While LA 105 is the current UK standard, the principle of using thresholds for dust

impacts, as described in the superseded document, is still relevant for evaluating potential nuisance and health effects during construction and in the operation of highway schemes. While the EPA doesn't set its own official dust deposition guidelines in Ireland, it does recommend adopting the German TA Luft standard, which suggests a limit of 350 mg/m²/day for total deposited dust to prevent soiling. The EPA have published useful guidance titled Quarries & Ancillary Activities – Guidelines for Planning Authorities (DoEHLG, 2004). In these guidelines the EPA recommend that the TA Luft dust deposition limit value be adopted at site boundaries associated with quarry developments. In the absence of an alternative, it is the only enforceable method available. Where this method is deemed unsuitable for use, and only in these circumstances, an alternative method may be agreed with the local authority. The same principles and recommendations apply to other extractive industries, such as those related to road-building, as the aim is to prevent nuisance from deposited dust.

Therefore, the following dust deposition limits are typically recommended;

- Dust Deposition Rate limit = 350 mg/m^2/day (averaged over a 30+/-2 day period using Bergerhoff Gauge Method).
- Dust Deposition Rate limit affecting sensitive ecological receivers = 1,000 mg/m^2/day
- PM_{10} 24 Hour Mean concentration limit = 50 µg/m^3 not to be exceeded more than 35 times a calendar year
- PM_{10} Annual Mean concentration limit = 40 µg/m^3
- $PM_{2.5}$ Annual Mean concentration limit = 25 µg/m^3

8.2.2 Study Area

For the Construction Phase, the air quality impact assessment focuses on air quality sensitive receptors adjacent to the areas of proposed works, e.g. demolition, excavation, construction and haul road activities. For the Construction Phase, the extent of the overall study area is typically up to a maximum of 250 metres (m) from a specific area of construction work, as per the relevant IAQM Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024). In addition, as per the IAQM Guidance (Box 1, IAQM, 2024), the potential for construction phase dust impacts has also focussed on ecologically designated or sensitive sites within a Study Area of 50m from the Proposed Development boundary and/or 50 m of the route(s) used by construction vehicles on the public highway, and up to 250 m from the site entrance.

For the Construction Phase and Operation Phase traffic assessment, the focus is on air quality receptors within an overall Study Area of 200m from the Proposed Development boundary, as per DMRB Guidance and TII Guidance Air quality Assessment of Specified Infrastructure Projects - Overarching Technical Document (TII PE-ENV-01106, Dec 2022). For the Construction Phase there is potential for traffic emissions to impact air quality in the short term over the construction phase, particularly due to increase in Heavy Goods Vehicles (HGVs) accessing the site. For the Operation Phase traffic assessment, the air quality assessment has focused on the change in distribution of road vehicles and the likely effects of these changes on local air quality which is predicted to occur in the Study Area due to altered traffic flows on account of the operation of the Proposed Development.

The IAQM Guidance classifies sensitive air quality receptors based on their sensitivity to impacts like dust soiling, health effects, and ecological damage, using a three-tiered system of high, medium or low sensitivity. This classification considers the receptor's location, type (e.g., residential, industrial), proximity to potential sources, and the magnitude of the impact.

8.2.3 Appraisal Method for Assessment of Effects

The air quality impact of the Proposed Development has been assessed for each of the two distinct phases of the Proposed Development:

- Construction Phase; and
- Operational Phase

The methods used to assess the air quality impacts during the construction and operational phases are discussed in the following sections.

8.2.3.1 Construction Phase

8.2.3.1.1 Construction Dust Impact Assessment

A Construction Dust Impact Assessment has been carried out to assess the risk to sensitive receptors as a result of dust soiling, health impacts and ecology impacts during the Construction Phase in accordance with the IAQM's Guidance on the Assessment of Dust from Demolition and Construction (IAQM 2024). This IAQM Guidance is recommended for use in PE-ENV-01106. This appraisal reviews the sensitivity of the Proposed Development location with respect to dust nuisance, human health and ecological impacts and then calculates a risk of impact using the magnitude of site activities. The IAQM's Guidance outlines a step-wise process as follows;

- Step 1: Screening the Need for a Detailed Assessment;
- Step 2: Assess the Risk of Dust Impacts, including;
  - Step 2A: Define the Potential Dust Emission Magnitude,
  - Step 2B: Define the Sensitivity of the Area,
  - Step 2C: Define the Risk of Impacts,
- Step 3: Site-Specific Mitigation; and
- Step 4: Determine Significant Effects.

8.2.3.1.1.1 Step 1: Screening the Need for a Detailed Assessment

A Construction Dust Impact Assessment will be required where there is:

- a 'human receptor' within:
  - 250 m of the Proposed Development site boundary; and/or
  - 50 m 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:

- 50 m of the Proposed Development site boundary; and/or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

8.2.3.1.1.2 Step 2: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large (Step 2A); and
- the sensitivity of the area to dust impacts (Step 2B), which is defined as low, medium or high sensitivity.

These two factors are combined in Step 2C to determine the risk of dust impacts with no mitigation applied. The risk of dust impacts (Step 2C) are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk

Based on the threshold criteria and professional judgement one or more of the groups of activities may be assigned a 'negligible' risk. Such cases could arise, for example, because the scale is very small and there are no receptors near to the activity.

Step 2A: Define the Potential Dust Emission Magnitude

Demolition, earthworks, construction and trackout will occur during the construction phase. The dust emission magnitude is based on the scale of the anticipated works and should be classified as Small, Medium, or Large. Table 8-8-3 outlines example criteria as per the IAQM guidance for each construction activity. It should be noted that, in each case, not all the criteria listed need to be met, and that other criteria may be used if justified in the assessment.

Table 8-8-3: Criteria used in the Determination of Dust Emission Class

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Demolition	▪ Total building volume <12,000 m^3 ▪ Construction material with low potential for dust release (e.g. meta cladding or timber ▪ Demolition activities <6m above ground level ▪ Demolition during wetter months	▪ Total building volume 12,000 m^3 - 75,000m^3 ▪ Potentially dusty construction material. ▪ Demolition activities 6-12m above ground level	▪ Total building volume >75,000m^3 ▪ Potentially dusty construction material (e.g. concrete) ▪ On-site crushing and screening, ▪ Demolition activities >12m above ground level

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Earthworks	▪ Total site area <18,000m^2 ▪ soil type with large grain size (e.g. sand), ▪ <5 heavy moving earth vehicles active at any one time ▪ Formation of bunds <3m in height	▪ Total site area 18,000 – 110,000m^2 ▪ Moderately dusty soil type (e.g. silt) ▪ 5-10 heavy moving earth moving vehicles active at any one time. ▪ Formation of bunds 3m - 6m in height,	▪ Total site area >110,000m^2 ▪ potentially dusty soil type (e.g. clay) ▪ >10 heavy earth moving vehicles active at any one time. ▪ Formation of bunds >6m in height
Construction	▪ Total building volume <12,000m^3 ▪ Construction material with low potential for dust release	▪ Total building volume 12,000 – 75,000m^3 ▪ Potentially dusty construction material (e.g. concrete) ▪ On-site concrete batching	▪ Total building volume >75,000m^3 ▪ On-site concrete batching ▪ Sandblasting
Trackout	▪ <20 outward HDV trips in any one day ▪ surface material with low potential for dust release, ▪ Unpaved road length <50m	▪ 20 - 50 outward HDV trips in any one day ▪ moderately dusty surface material (e.g. high clay content), ▪ Unpaved road length 50-100m	▪ >50 outward HDV trips in any one day ▪ potentially dusty surface material (e.g. high clay content ▪ Unpaved road length >100m

Step 2B: Define the Sensitivity of the Area

The IAQM guidance, Box 7 (IAQM 2024) outlines the criteria for determining the sensitivity of receptors.

- High sensitivity receptor with respect to dust nuisance – surrounding land where:

  Users can reasonably expect enjoyment of a high level of amenity;

  The appearance, aesthetics or value of their property would be diminished by soiling;

  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; and

  Examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.

- Medium sensitivity receptor with respect to dust nuisance – surrounding land where:

  Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;

  The appearance, aesthetics or value of their property could be diminished by soiling;

The people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; and

Indicative examples include parks and places of work.

- Low sensitivity receptor with respect to dust nuisance – surrounding land where:

  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;

  There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land; and

  Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.

Receptor sensitivity can be described as follows with respect to human health as per the IAQM guidance (IAQM 2024):

- High sensitivity receptor with respect to human health – surrounding land where:

  Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and

  Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.

- Medium sensitivity receptor with respect to human health – surrounding land where:

  Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and

  Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.

- Low sensitivity receptor with respect to human health – surrounding land where:

  Locations where human exposure is transient; and

  Indicative examples include public footpaths, playing fields, parks and shopping streets.

Receptor sensitivity can be described as follows with respect to ecological effects as per the IAQM guidance (IAQM 2024):

- High sensitivity receptor with respect to ecological effects:

  Locations with an international or national designation and the designated features may be affected by dust soiling;

  Locations where there is a community of a particular dust sensitive species, such as Irelands Red List No.10 Vascular Plants; and

  Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings

- Medium sensitivity receptor with respect to ecological effects:

  Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown;

  Locations with a national designation where the features may be affected by dust deposition; and

  Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features

- Low sensitivity receptor with respect to ecological effects:

  Locations with a local designation where the features may be affected by dust deposition; and

  Indicative example is a local Nature Reserve with dust sensitive features.

The IAQM guidance (IAQM 2024) also outline the criteria for assessing the human health impact from PM_{10} emissions from construction activities based on the current annual mean PM_{10} concentration, receptor sensitivity as detailed above and the number of receptors affected. Where the number of receptors is not clear, i.e. for an apartment building, conservative sensitivities can be assumed. In addition, when calculating the sensitivity with respect to human health, the background concentrations of particulates was reviewed. The background air quality in the area of the Proposed Development is discussed in Section 8.3.

Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease.

The IAQM guidance, Box 7 (IAQM 2024) outlines the criteria for determining the sensitivity of receptors as detailed above. This is summarised in Table 8-8-4 for nuisance dust on people and property with respect to human health.

Step 2C: Define the Risk of Dust Impacts

These two factors are combined in Step 2C to determine the risk of dust impacts with no mitigation applied. The risk of dust impacts (Step 2C) are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk.

Table 8-8-4: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity	
	Dust Soiling Effects	**Health Effects of PM_{10}**
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM_{10}
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets

The criteria detailed in Table 8-8-5 ,Table 8-8-6 and Table 8-8-7 (pertaining to Tables 2-4 in the IAQM guidance (IAQM 2024) were used to determine the sensitivity of the area to dust soiling effects, human health impacts and ecological impacts respectively.

Table 8-8-5: Sensitivity of the Area to Dust Soiling Effects on People and Property.

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20m	**<50m**	**<100m**	**<250m**
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

Table 8-8-6: Sensitivity of the Area to Human Health Impacts.

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

Receptor Sensitivity	Annual Mean PM_{10} Conc	Number of Receptors	Distance from Source (m)			
			<20m	<50m	<100m	<250m
		1-10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	<24 µg/m^3	≥1	Low	Low	Low	Low

Table 8-8-7: Sensitivity of the Area to Ecological Impacts

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

8.2.3.1.2 Construction Traffic

During the construction phase, additional traffic trips will be necessary to allow site staff, plant, and materials to access the construction site.

Construction phase traffic has the potential to impact air quality and climate. The UK Highways Agency Design Manual for Roads and Bridges (DMRB) guidance (UK Highways Agency, 2019a), states that road links meeting one or more of the criteria set out below can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. This approach is considered best practice and can be applied to any development that causes a change in traffic

A detailed analysis of construction traffic volumes has been conducted to determine the expected HDV movements required to transport the materials extracted and delivered to site, along with the passenger cars associated with construction workers and suppliers.

The EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality (2017) indicative criteria for requiring an air quality assessment, as shown in Table 8-8-8,

outlines the scoping criteria used to determine whether the construction traffic volumes for the Proposed Development can be scoped out or require an assessment based on the changes between the Do Minimum traffic flows (without the Proposed Development) and the Do Something traffic flows (with the Proposed Development).

Table 8-8-8: Extract from EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality (2017) - Table 6.2: Indicative criteria for requiring an air quality assessment.

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans 3.5t gross vehicle weight). 2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere. A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate / decelerate, e.g. traffic lights, or roundabouts

8.2.3.2 Operation Phase

For the Operation Phase assessment, the air quality impact assessment focuses on the change in distribution of road vehicles and the likely effects of these changes on local air quality predicted to occur in the study area due to altered traffic flows on account of the operation of the Proposed Development.

The operational traffic data was screened to establish if traffic changes are expected due to the Proposed Development and if these changes may affect air quality. The screening criteria are based on the changes between the Do Something (DS) traffic (i.e. with construction) compared to the Do Minimum (DM traffic) in the year of opening. The traffic data was screened to establish if traffic changes are expected due to the Proposed Development and if these changes may affect air quality. This approach is consistent with the construction traffic assessment, where the criteria are based on the changes between the Do-Something (DS) operational traffic compared to the Do-Minimum (DM) traffic in the year of opening 2032.

The construction and operational traffic assessment methodology has used the UK Design Manual for Roads and Bridges Screening Model (UK Highways Agency 2007) (Version 1.03c, July 2007), the NOx to NO_2 Conversion Spreadsheet (UK Department for Environment, Food and Rural Affairs, 2020) (Version 9.1) and the guidance issued by Transport Infrastructure Ireland; Transport Infrastructure Ireland, Air Quality Assessment of Specified Infrastructure Projects Overarching Technical Guidance, PE-ENV-01106 (Dec. 2022).

In 2024, the UK Highways Agency DMRB air quality guidance was revised with LA 105 Air Quality (LA105 Air Quality, Version 0.1.0, June 2024). This revised document outlines a number of changes for air quality assessments in relation to road schemes but can be applied to any development that causes a change in traffic. The DMRB air quality spreadsheet is widely used as a screening assessment tool for air quality impact assessments in Ireland with

detailed modelling only required if this screening tool indicated potential non-compliance with the air quality standards. However, the DMRB spreadsheet tool was last revised in 2007 and only accounts for modelled years up to 2025. Vehicle emission standards up to Euro V are included but since 2017, Euro VI standards are applicable for the new fleet. In addition, the model does not account for electric or hybrid vehicle use. Therefore, this is a somewhat outdated assessment tool. The LA 105 guidance document states that the DMRB spreadsheet tool may still be used for simple air quality assessments where there is unlikely to be a breach of the air quality standards. Due to its use of an older and potentially higher polluting fleet, predicted vehicle emissions can be considered to be worst-case, when compared to more modern models. Therefore, the DMRB Screening Tool results will be conservative in nature and provide a worst-case assessment.

LA 105 Air Quality guidance states that modelling should be conducted for NO_2 for the base year and opening year for both the do minimum (do nothing) and do something scenarios. Modelling of PM_{10} is only required for the base year or the base year to demonstrate that there is no impact or exceedance of the PM_{10} air quality thresholds as a result of the project. Where the air quality modelling indicates exceedances of the PM_{10} air quality thresholds in the base year then PM_{10} should be included in the air quality model in the do minimum and do something scenarios. Modelling of $PM_{2.5}$ is not required as there are currently no issues with compliance with regard to this pollutant. The modelling of PM_{10} can be used to show that the project does not impact on the $PM_{2.5}$ limit value as if compliance with the PM_{10} limit is achieved then compliance with the $PM_{2.5}$ limit will also be achieved. Historically modelling of carbon monoxide (CO) and benzene was required. However, this is no longer needed as concentrations of these pollutants have been monitored to be significantly below their air quality limit values in recent years, even in urban centres (EPA, 2021). The key pollutants assessed are NO_2 and of PM_{10}.

Conversion of NOx to NO_2

The method to convert roadside NOx to NO_2 within the DMRB model was based on measurements made between 1999 and 2001. Recent evidence shows that the proportion of primary NO_2 in vehicle exhaust has increased. This means that the relationship between NOx and NO_2 at the roadside has changed from that currently used in the DMRB model. An updated NOx to NO_2 calculator is available from the DEFRA website (version 9.1, August 2024). The calculator applies to all road types and can also be used to estimate roadside NOx from roadside NO_2 measurements. The use of the DMRB model has been adapted to use the new calculator in accordance with the relevant instructions.

DMRB model validation work carried out by the Highways Agency has indicated that the model may significantly under-predict concentrations of nitrogen dioxide alongside urban city-centre roads classified as ‘street canyons’. In this context, a street canyon may be defined as a relatively narrow street with buildings on both sides, where the height of the buildings is generally greater than the width of the road. It has been decided that on review of the streetscapes in proximity to the site that a street canyon effect is unlikely to occur as there are relatively open areas in close proximity to the site.

DEFRA has stated that if the annual mean objectives are not exceeded, it may be confidently assumed that the short-term (1-hour) objectives will also be met. However, if this approach is used, then care must be taken to include relevant locations where the hourly objectives might

apply. If the annual mean nitrogen dioxide concentration is greater than 60 µg/m3, then there is a risk that the 1-hour objective may also be exceeded.

The calculator includes Local Authorities in Northern Ireland and the TII guidance recommends the use of 'Armagh, Banbridge and Craigavon' as the choice for local authority when using the calculator. The choice of Craigavon provides the most suitable relationship between NO_2 and NOx for Ireland. The "All Other UK Traffic" traffic mix option was used.

Assessment of Impact on Ecological Designated Sites

In line with TII and DMRB guidance, consideration of air quality impacts should also be given to ecological habitats with a national or international designation that are located within 200m from the roads assessed within the study area and where a significant change in AADT flows (>5%) will occur. Nitrogen oxides concentrations and nitrogen deposition rates are calculated within the designated site. The results are then compared with the NOx standard for the protection of vegetation of 30 µg/m^3 and the incremental change due to the Proposed Development identified. Where the Proposed Development is expected to cause an increase in concentrations of more than 2 µg/m^3 and the predicted concentrations (including the background) are close to (within 10% of), or exceed the standard, then the sensitivity of the habitat to NOx should be assessed by the project ecologist.

8.2.4 Assessment of Significance of Potential Effects

In terms of significance of potential environmental effects, the magnitude (scale of change) has been determined by considering the impacts of the Proposed Development on air quality with reference to the baseline conditions and environmental assessment criteria.

8.2.4.1 Describing the impact:

The rationale for describing the impact of the Proposed Development is derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) "Land-Use Planning & Development Control: Planning for Air Quality (January 2017).

There is a two-stage process to be followed in the assessment of air quality impacts:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts

The suggested framework for describing the impacts is set out in Table 6.3 of the EPUK & IAQM guidance document and is shown in Table 8-8-9. The term Air Quality Assessment Level (AQAL) has been adopted as it covers all pollutants, i.e. those with and without formal standards. AQAL is used to include air quality objectives or limit values where these exist. The Environment Agency uses a threshold criterion of 10% of the short term AQAL as a screening criterion for the maximum short-term impact. The EPUK & IAQM guidance adopts this as a basis for defining an impact that is sufficiently small in magnitude to be regarded as having an insignificant effect.

Table 8-8-9: Impact Descriptors for Individual Receptors

Long term average Concentration at Receptor in assessment year	& Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	**2-5**	**6-10**	**>10**
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Moderate
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Explanation

1. AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.

2. The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5% will be described as Negligible.

3. The Table is only designed to be used with annual mean concentrations.

4. Descriptors for individual Receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a 'moderate' adverse impact at one Receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.

5. When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.

6. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.

7. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.

8.2.4.2 Assessing Significance

The rationale for the assessment of significance is derived from the EPUK & IAQM Guidance (paragraphs 7.1-7.12 referring to Table 6.3) and relates to **Error! Reference source not found.**.

Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as 'significant' or 'not significant'. An 'impact' is the change in the concentration

of an air pollutant, as experienced by a receptor. This may have an 'effect' on the health of a human receptor, depending on the severity of the impact and other factors that may need to be taken into account. The impact descriptors set out in Table 8-8-9 are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual receptors. Whilst it may be that there are 'slight', 'moderate' or 'substantial' impacts at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances.

Any judgement on the overall significance of effect of a development will need to take into account such factors as:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts; and
- other factors may be relevant in individual cases.

8.3 The Existing and Receiving Environment (Baseline Situation)

8.3.1 Baseline Air Quality

No baseline air quality or dust deposition surveys have been undertaken. Reference has been made to relevant EPA monitoring data to quantify the existing air quality in proximity to the Proposed Development site.

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The National Ambient Air quality Network is a series of air quality monitoring stations across the country. Air quality data from the stations is assessed against the European legal limit values and WHO guideline values.

The most recent annual report on air quality produced by the Air Quality in Ireland 2024 (EPA (2025), details the range and scope of monitoring undertaken as part of the National Ambient Monitoring Programme (AAMP) which commenced at the end of 2017. The report concluded that Ireland met all of its EU CAFÉ Directive legal requirements in 2024. However, while Ireland generally meets EU legal air quality limits, it still falls short of the more stringent health-based WHO air quality guidelines for certain pollutants. Achieving future targets will be very challenging. The two most significant pollutants in Ireland is particulate matter from burning solid fuel, and nitrogen dioxide from vehicle emissions/traffic.

The Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Clean Air for Europe Directive) requires that areas are divided into zones for the assessment and management of air quality. In Ireland, Zone A is the Dublin Conurbation, Zone B is the Cork Conurbation, Zone C is all large towns in Ireland with a population >15,000 and Zone D is all remaining area. In terms of air quality, the Proposed Development site is categorised as being in Zone A, the Dublin conurbation as denoted by the EPA.

The Environmental Protection Agency's Air Quality Index for Health (AQIH) is a number from one to 10 that identifies the current air quality currently in a region and whether or not this might affect human health. This reading is updated twice a day, once in the morning (by

9.30am) and once in the evening (by 19.30pm). A reading of 10 means the air quality is very poor and a reading of one to three inclusive means that the air quality is good. The AQIH readings are based on five air pollutants which can harm human health: Ozone gas, nitrogen dioxide gas, sulphur dioxide gas, $PM_{2.5}$ particles and PM_{10} particles. The AQIH at the monitoring station at Tallaght has a current rating of 1, meaning 'Good' air quality [index as of 10.00 hours, Tuesday, November 18th, 2025] (EPA, 2025)).

Nitrogen Dioxide (NO_2), and Particulate Matter (PM_{10} and $PM_{2.5}$) background concentrations from the EPA Air Quality monitoring station at the Tallaght site (EPA Station 44, 53.2807°N, -6.3589°E), located approximately 4.55 km east of the site has been referenced. The most recent year of data has been summarised and referenced (2024) in Table 8-8-10.

The EPA Annual Air quality Bulletin 2024 (EPA, 2025) indicates that the air quality monitoring station at Tallaght had no exceedances of the hourly limit for NO_2 of 200 µg/m^3 and no exceedances of PM_{10} 24-hr Mean > 50 µg/m^3 (days) relative to the current EU 2008 Limit Values (µg/m^3) in 2024. The monitoring results at the EPA Air Quality monitoring station at Tallaght for 2024 show a marginal exceedance of the 2021 WHO guidelines annual mean limit for NO_2 and $PM_{2.5}$. However, the Air Quality Standard limit values are not exceeded. The background air quality in the area of the development is of good quality.

Table 8-8-10: Annual Average Nitrogen Dioxide (NO_2), PM_{10} and $PM_{2.5}$ concentrations at Tallaght in 2024

Station	Period	Measured Concentration (µg/m^3)			
		NO_2 (µg/m^3)	NO_x (µg/m^3)	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
Tallaght	**2024**	12.1 ug/m^3	25.2 ug/m^3	10.4 ug/m^3	6.2 ug/m^3
Current EU 2008 Limit Values (µg/m^3)		40 µg/m^3 (Annual Limit for Protection of Human Health)	30 µg/m^3 (Annual Limit for Protection of Vegetation)	40 µg/m^3 (Annual Limit for Protection of Human Health)	20 µg/m^3 (Annual target value for the protection of Human Health)
EU 2024 Limit Values (µg/m^3) (Limit Values to be obtained by 1st January 3030)		20 µg/m^3 Annual Limit for Protection of Human Health)	30 µg/m^3 (Annual Limit for Protection of Vegetation)	20 µg/m^3 (Annual Limit for Protection of Human Health)	10 µg/m^3 (Annual target value for the protection of Human Health)
WHO Air quality Guideline (AQG)		10 µg/m^3	N/A	15 µg/m^3	5 µg/m^3

8.3.2 Effect of local meteorological conditions

A key factor in assessing temporal and spatial variations in air quality are the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and, for ground level sources such as traffic emissions, pollutant concentrations are generally

inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5} – PM_{10}$) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity.

Dust generation rates during the Construction Phase depends on the construction activities, particle size, the moisture content of the material and weather conditions. Wind is of key importance in dispersing air pollutants and, for ground level sources such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5} – PM_{10}$) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

Dust emissions are dramatically reduced where rainfall has occurred due to the cohesion created between dust particles and water and the removal of suspended dust from the air. High levels of moisture either retained in the soil or as a result of rainfall help suppress the generation of dust due to the cohesive nature of water between dust particles. Rain also assists in removing dust from the atmosphere through washout. Wind can lift particles up into the air and transport the dust downwind as well as drying out the surface. The worst dust deposition conditions typically occur, therefore, during dry conditions with strong winds.

The nearest representative weather station collating detailed weather records is Casement Aerodrome meteorological station, which is located approximately 2 km north of the site. Casement Aerodrome met data has been examined to identify the prevailing wind direction and average wind speeds over a five year period (see Figure 8-8:1). For data collated during five representative years (2016 - 2020), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.5 m/s over the period 1981 - 2010 (Met Eireann, 2022).

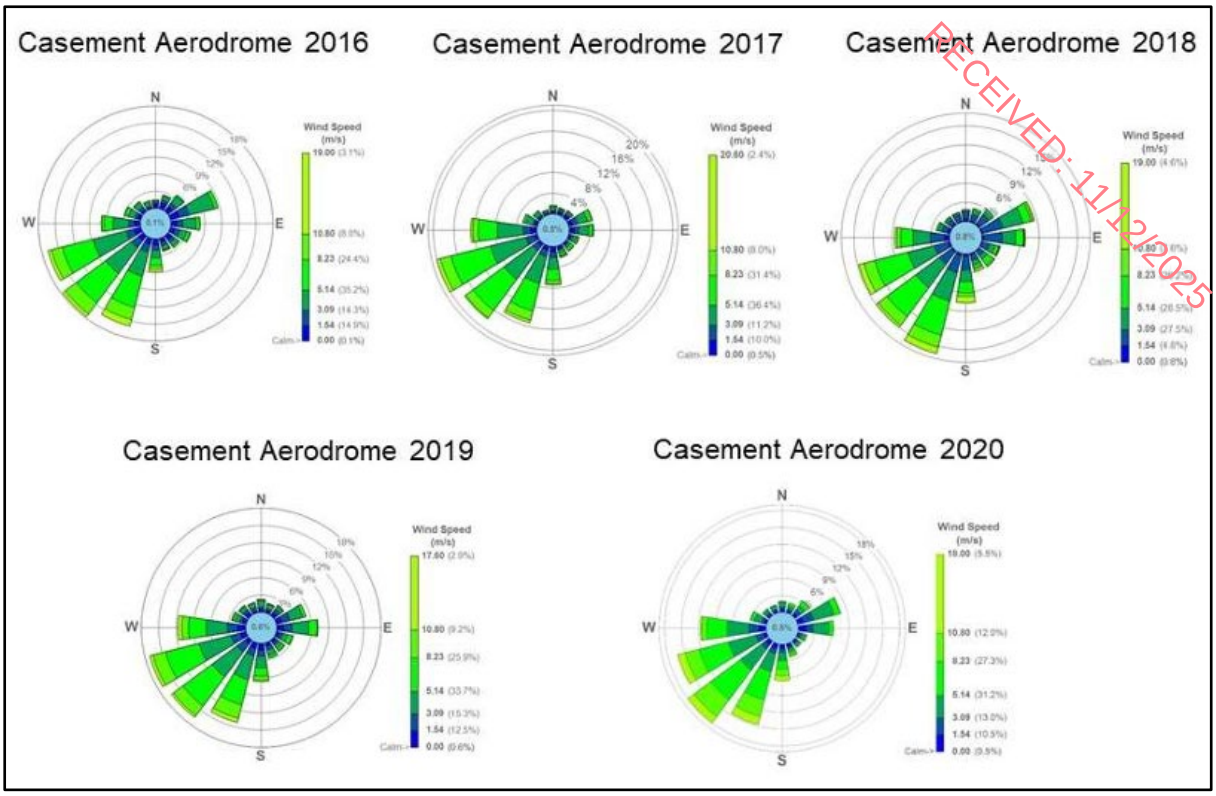

Figure 8-8:1: Casement Aerodrome Windrose 2016-2020 (Met Eireann, 2022)

It is typical to assume no dust is generated under “wet day” conditions where rainfall greater than 0.2mm (USEPA 2006) has fallen. A review of historical 30 year average data for Casement Aerodrome indicates that on average 183 days per year have rainfall over 0.2 mm (Met Eireann, 2021). Therefore, it can be determined that approximately 50% of the time dust generation will be reduced.

8.3.3 Receptor Locations

8.3.3.1 Sensitive Human Receptors

The sensitive residential receptors considered as part of the air quality assessment is the nearest existing residential property to the Proposed Development and future residents of the Proposed Development adjacent to the proposed site access roads.

The receptor locations assessed in the DMRB traffic emissions screening tool are shown in Figure 8-8:2 and summarised in Table 8-8-1.

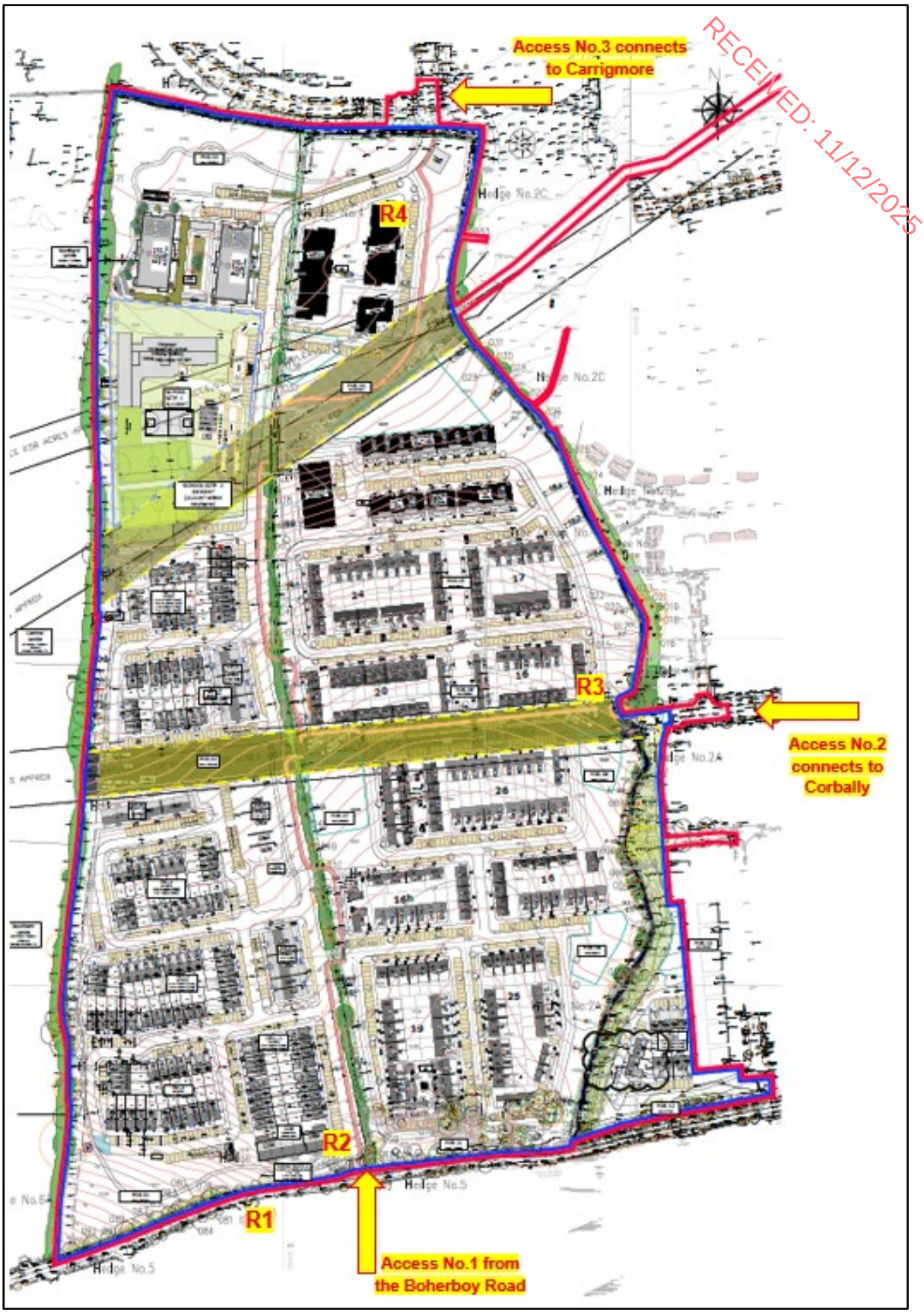

Figure 8-8:2: Residential Receptors used in the DMRB Assessment

Table 8-8-11: Sensitive Residential Receptor locations assessed in the DMRB Screening Method of Traffic Emissions Air Quality Impact Assessment

Receptor Description and Location	ITM Grid Reference	Distance to Road
R1 - Residents of Proposed Development	704683, 726045	@ 40m from façade to centre of Boherboy Road @ 100m from façade to centre of Access Road No. 1 @ 100m from façade to centre N81
R2 -Future Residents of Proposed Development, Phase 1A	704751, 726161	@ 45m from façade to centre of Boherboy Road @ 15m from façade to centre of Access Road No. 1 @ 200m from façade to centre N81
R3 -Future Residents of Proposed Development, Phase 2B	704941, 726394	@ 425m from façade to centre of Boherboy Road @ 10m from façade to centre of Access Road No. 2
R4 -Future Residents of Proposed Development, Phase 3B	704805, 726719	@ 10m from façade to centre of Access Road No.3

8.3.3.2 Sensitive Ecological Receptors

There are six designated sites located within the vicinity of the proposed development. The nearest designated site is Glenasmole Valley SAC, located c. 4.17km to the south-east of the proposed development site in the Dublin Mountains. This is outside the zone of influence of the Proposed Development.

8.3.4 Air Quality Impact due to Traffic Emissions

Traffic flow information was obtained from Pinnacle Consulting Engineers. Data for the base year 2025, construction year 2030 and operational year 2032 Do Nothing and Do Something scenarios were provided.

The air quality impact assessment due to changes in traffic flows is based on assessing existing and predicted traffic flows for the surrounding road network. The traffic flows on the surrounding road network for the base year 2025 are shown in

Table 8-8-12. The traffic flows on the surrounding road network for the construction year 2030 and the proposed year of opening 2032 for the ‘do nothing’ and ‘do something’ assessment scenarios are shown in Table 8-8-13. Figure 8-8-3 shows the corresponding Site No./Road links referred to. In the tables. The following tables includes the potential for cumulative effects of the Proposed Development in operation in combination with other permitted and proposed developments in the vicinity of the site that may contribute to cumulative effects on the surrounding transport network. Background concentrations have been included as per Section 8.3.1 of this chapter based on available EPA background monitoring data from the nearest ambient air quality station located in Tallaght (EPA, 2025).

Table 8-8-12: AADT traffic flows for the base year 2025

Site No	Location	2025 AADT	HGV
1	Citywest Road/Citywest Road	20,930	4.80%
2	Fortunestown Lane/Carrigmore	7,578	1.63%
3	Garter Lane/ Fortunestown Lane	12,513	1.63%
4	Slade Road/Boherboy Road	13,328	2.53%
5	Development Access	4 826	3.92%
6	Boherboy Road/N81	14,487	8.01%
7	N81/N82	18,337	6.45%
8	N82/Corbally Access	15,147	5.51%

Table 8-8-13: Predicted AADT traffic flows in construction year 2030 and proposed year of operation 2032

	Construction					Operational				
Site	Trip Distribution	AADT (Do Nothing) 2030	Construction Flows	HGV	% Impact	Trip Distribution	AADT (Do Nothing) 2032	Development Flows	HGV	% Impact
1	0.00%	22,628	0	0	0.00%	16.72%	22,841	1054	0	4.61%
2	0.00%	8,193	0	0	0.00%	21.53%	8,270	1357	0	16.41%
3	0.00%	13,529	0	0	0.00%	4.81%	13,657	303	0	2.22%
4	0.00%	14,410	0	0	0.00%	3.68%	14,546	232	0	1.60%
5	100.00%	5,218	810	81	15.52%	6.81%	5,267	429	0	8.15%
6	100.00%	15,662	810	81	5.17%	1.91%	15,810	120	0	0.76%
7	100.00%	19825	810	81	4.09%	12.27%	20,012	773	0	3.86%
8	0.00%	16,376	0	0	0.00%	32.27%	16,530	2034	0	12.30%

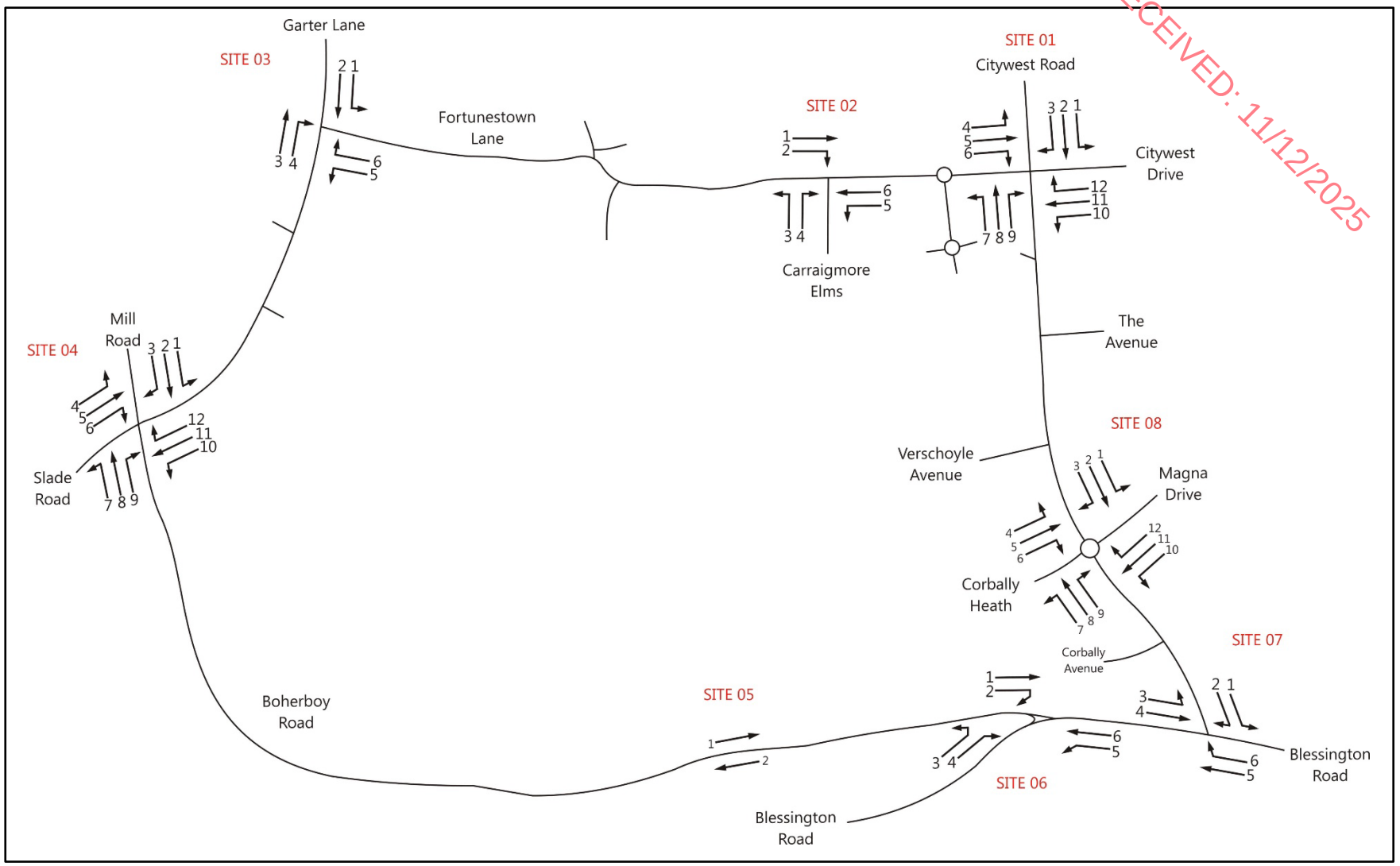

Figure 8-8-3: Site Locations/Road Links

8.4 Characteristics of the Proposed Development

Chapter 2 of this EIAR includes a full detailed description of the Proposed Development.

8.4.1 Construction Phase

During the construction stage the main source of air quality impacts will be as a result of fugitive dust emissions from site activities. Emissions from construction vehicles and machinery have the potential to impact air quality.

8.4.2 Operational Phase

During the Operation Phase, the most significant potential impact with respect to air quality will be because of the potential air quality impacts associated with altered traffic flows within the Study Area due to the operation of the Proposed Development.

The following section describes the primary sources of potential air quality and climate impacts which have been assessed as part of this EIAR.

8.5 Potential Impact of the Proposed Development

The air quality impact of the Proposed Development has been assessed for the each of the two distinct phases:

- Construction Phase; and
- Operational Phase

8.5.1 Construction Phase

8.5.1.1 Construction Dust Impact Assessment

The greatest potential impact on air quality during the construction phase is from construction dust emissions, PM_{10} and $PM_{2.5}$ emissions and the potential for nuisance dust. Dust is characterised as encompassing particulate matter with a particle size of between 1 and 75 microns (1- 75µm), therefore includes both PM_{10} and $PM_{2.5}$. Deposition typically occurs in close proximity to a construction site and potential impacts generally occur within 50m of the haul routes used by construction vehicles on the public road, up to 250 m from the construction site entrance(s).

This section of the chapter provides an overview of the typical activities that have potential for dust impacts during the construction phase of the Proposed Development The potential for dust emissions due to construction can vary substantially day to day and are strongly influenced by the level of activity, the specific operations, and the prevailing meteorological conditions.

The type of construction activities that could cause fugitive dust emissions are demolition; earthworks; handling and disposal of spoil; wind-blown particulate material from stockpiles; handling of loose construction materials; and movement of vehicles, both on and off site. The main effect of any dust emissions, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars and laundry. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects.

The Dust Impact Assessment has been undertaken in accordance with IAQM Guidance on the assessment of dust from demolition and construction, (Institute of Air Quality Management (IAQM), London. 2024, (version 2.2)), to predict the risk of dust impacts and the level of mitigation that is required to control the residual effects to a level that is "not significant".

The Construction Dust Impact Assessment steps are outlined below:

8.5.1.1.1 Step 1: Screening the Need for a Detailed Assessment

A Construction Dust Impact Assessment is deemed to be required because of the following;

- There are 'human receptors' within 250 m of the Proposed Development site boundary; and
- There are 'human receptors' within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s)

8.5.1.1.2 Step 2: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts has been determined using the four risk categories: negligible, low, medium and high risk. The construction site area (i.e. within the Proposed Development boundary) has been allocated to a risk category based on the following approach;

- Step 2A – definition of the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large;
- Step 2B - definition of the sensitivity of the area to dust impacts, which is defined as low, medium or high sensitivity; and
- Step 2C – determination of the risk of dust impacts with no mitigation applied.

8.5.1.1.2.1 Step 2A: Define the Potential Dust Emission Magnitude

The potential dust emission class for the Proposed Development were determined using the criteria detailed in Table 8-8-3. There will be 18.7 hectares (ha) of land permanently acquired for the construction of the Proposed Development including the residential development and proposed creche. Also included is the provision of pedestrian and cycle connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

The proposed development will have a requirement for imported materials, primarily concrete, steel, stone and asphalt. The majority of new materials brought to site will be used immediately. The remainder will be stored within the site boundary. Material excavated on the site will be used in construction. The re-use of this material reduces the quantity of materials being imported to the site. Prior to use, this material will be subject to appropriate testing to ensure material is suitable for construction. Locations to stockpile this material will be identified by the contractor(s) in the CMP.

<u>Demolition</u>

There is very little demolition proposed i.e. demolition of existing agricultural outbuilding at the southern end of the site. The development will principally consist of the demolition of the existing, vacant agricultural outbuildings on site (996m^2).

Therefore, as per the suggested criteria detailed in Table 8-8-3**:**

- Demolition volume is, 181m^3 .Therefore <12,000m^3;
- Potentially dusty construction material (e.g. concrete); and
- Demolition activities are <6m above ground level.

Therefore the dust emission magnitude for Demolition is defined as **Small.**

Earthworks

Earthworks covers the processes of soil-stripping, ground-levelling, excavation and landscaping. Excavation and fill operations to enable the construction of the Proposed Development will require a quantity of excavated material to be removed from the site to suitable locations. As a result, there is anticipated to be a need for haulage of material on the existing road network.

GSI publications and mapping indicate that the site is underlain primarily by glacial till derived from Sandstone and Shale. The soil association composition as determined from the Teagasc website datasets on the EPA website show the soil to be slightly gravelly sandy clay/silt.

Earthworks figures provided by DNV include:

- Total Cut: 184,422m^3
- Total Fill: 249,228 m^3
- Total Exported: 103,689 m^3
- Total Imported: 164,654 m^3

Therefore, as per the suggested criteria detailed in Table 8-8-3**:**

- Total site area is 18.5 ha; >110,000m^2;
- Potentially dusty soil type (clay); and
- >10 heavy moving earth moving vehicles active at any one time;

Therefore, the dust emission magnitude for Earthworks is defined as **Large.**

Construction

Construction includes any activity involved with the provision of a new structure (or structures), its modification or refurbishment. In summary , the Proposed Development comprises the construction of 627 no. dwellings, comprised of 306 houses 133 duplex units and 188 apartments and a 2-storey crèche. Net site area (Developable lands) is 12.0ha.

The proposed development will have a requirement for imported materials, primarily concrete, steel, stone and asphalt. Material excavated on the site will be used in construction. The re-use of this material reduces the quantity of materials being imported to the site. Prior to use, this material will be subject to appropriate testing to ensure material is suitable for construction.

Therefore, as per the suggested criteria detailed in Table 8-8-3**:**

- Total building volume is >75,000m^3;

- Potentially dusty construction material (concrete); and
- On site concrete batching expected;

Therefore, the dust emission magnitude for Construction is defined as **Large.**

Trackout

Trackout includes 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 duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

During the construction of the Proposed Development, materials will be required to be imported including earthworks fill materials that cannot be sourced on-site, concrete products, steel materials, stone and asphalt.

The haulage of materials and workers to and from the site of the Proposed Development will create a significant temporary impact on both road users and residents living along the haul roads. It is proposed that access to the site will be via a newly formed access off the Boherboy Road. This will coincide with the finished development access.

All access roads used by contractors will be monitored for mud and any construction materials and cleared using a shovel and broom and if required a mechanical road sweeper. The construction period for the proposed development is anticipated to be approximately 5 years from the commencement of the site works.

- It is assumed that there will be 20-50 outward HDV trips on average / day.,
- Potentially dusty construction material (e.g. high clay content)
- Unpaved road length >100 m.
- Therefore, the dust emission magnitude for trackout was defined as **Large.**

8.5.1.1.2.2 Step 2B: Define the Sensitivity of the Area

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

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

The criteria for determining the sensitivity of the area to dust soiling effects on people and property, to human health impacts and to ecological impacts are detailed in Table 8-8-5 - Table 8-8-7.

Table 8-8-14 outlines the range of numbers of properties within specific distance bands from the proposed construction activities to determine the receptor sensitivity of the area to Dust Soiling Effects on People and Property.

Table 8-8-14: Cumulative number of sensitive receptors within 20m, 50m, 100m and 250m of the Proposed Development

Parameter	Number of Receptors within Distance from site (m)			
	<20m	<50m	<100m	<250m
Total No. of Receptors in proximity to the Proposed Development Earthworks and Construction	18	~53	~185	>200
Receptor Sensitivity Earthworks and Construction	High	Medium	Medium	Low
Total No. of Receptors in proximity to the Proposed Development Demolition	0	0	0	~50
Receptor Sensitivity Demolition	Low	Low	Low	Low
Total No. of Receptors in proximity to the Proposed Development Demolition	-	~50	-	-
Receptor Sensitivity Trackout	-	High	-	-

Sensitivity of People to Dust Soiling

- Earthworks and Construction: Table 8-8-14 indicates there are 18 high sensitivity receptors <20m from the Proposed Development site boundary. There are approximately a further 35 properties within 50m of the Proposed Development site boundary

  (*The IAQM guidance states that a high sensitivity receptor is where: users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land*).

- Demolition: There is very little demolition proposed; an existing agricultural outbuilding at the southern end of the site will be demolished. There are no high sensitivity receptors <100m from the Proposed Development site boundary. There are approximately 50 properties within 250m of the Proposed Development site boundary

Therefore, based on Table 8-8-5**,** the sensitivity of the Area to Dust Soiling Effects on People and Property for is **High**; in terms of potential earthworks and construction and **Low** in terms of potential demolition dust impacts.

- Trackout: For trackout, the distances should be measured from the side of the roads used by construction traffic (the public highway or road used by site vehicles). The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road. The site access road through the proposed development is considered in the trackout dust assessment. Considering the phased nature of the Proposed Development of future residential receptors in the early phases are considered within 50m from the access road used by construction traffic The number of receivers is counted as the number of apartments in building blocks

- It is estimated that > 50 units (high sensitive receptors) will be <50m from the edge of the road used by construction traffic.

Therefore, based on Table 8-8-5**,** the sensitivity of the Area to Dust Soiling Effects on People and Property is **High**; in terms of trackout dust impacts.

Sensitivity of the Area to Human Health Impacts

As stated, there are 18 high sensitive receptors <20m from the proposed development site boundary. Table 8-8-10 outlines baseline air quality in the local area. The PM_{10} concentration recorded at the EPA Air Quality monitoring station in Tallaght for 2024 is 10.4 µg/m^3 , which is below the 2024 EU limit value of 20µg/m^3 for the protection of human health and below the WHO AQG of 15µg/m^3.

There are 18 sensitive receptors within 20m of the Proposed Development boundary. As shown in Table 8-8-6, the sensitivity of the area to Human Health Impacts is **Low;** in terms of potential demolition, earthworks, construction and trackout dust.

Sensitivity of the Area to Ecological Impacts

Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease.

There are six designated sites located within the vicinity of the proposed development. The nearest designated site is Glenasmole Valley SAC, located c. 4.17km to the south-east of the proposed development site in the Dublin Mountains. Therefore, based on Table 8-8-7**,** the sensitivity of the Area to Ecological Impacts is **Low**; in terms of potential earthworks, construction and track out dust impacts.

The sensitivity of the area to dust soiling, human health impacts and ecological impacts for each activity is summarised in Table 8-8-15

Table 8-8-15: Outcome of Defining the Sensitivity off the area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	High	High	High
Human Health	Low	Low	Low	Low
Ecological Impacts	Low	Low	Low	Low

8.5.1.1.2.3 Step 2C: Define the Risk of Impacts

In accordance with the IAQM Guidance, the dust emission magnitude (Step 2A) and sensitivity of the area (Step 2B) have been combined with no mitigation applied. The level of risk of dust soiling, impact on human health and ecological impact for each activity before mitigation, is summarised in Table 8-8-16.

The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring. The dust risk categories for each of the four activities determined in Step 2C is used to define the appropriate, site-specific, mitigation measures to be adopted. For those cases where the risk category is 'negligible', no mitigation measures beyond those required by legislation will be required.

Table 8-8-16: Summary Dust Risk to Define Site-specific Mitigation

Potential Impact	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Negligible	High Risk	High Risk	High Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk
Ecological Impacts	Negligible	Low Risk	Low Risk	Low Risk

8.5.1.1.3 Step 3: Site-specific Mitigation

In accordance with the IAQM Guidance, for proposed mitigation measures, the highest risk category should be applied. Therefore, the mitigation measures applicable to a **High Risk Site** should be applied as outlined in Section 8.6.

8.5.1.2 Construction Traffic

During the construction phase, additional traffic trips will be necessary to allow site staff, plant, and materials to access the construction site. This will temporarily increase traffic on the road network surrounding the Proposed Development area. Traffic generation during construction will mainly originate from various sources, including Heavy Goods Vehicles (HGVs) and construction staff/site visitors passenger cars

HGV traffic will result from delivering construction and fill materials to the site and removing surplus excavated materials, if any. This will fluctuate throughout the construction period, depending on the activities taking place at any specific time. Construction tasks that are likely to generate the highest volumes of HGVs delivering materials include those involved in earthworks, building various structures, drainage, and pavements.

Construction traffic can impact directly on local air quality generally and on any sensitive receptors that are located adjacent to the road networks being used during construction. The significance of air quality impacts due to vehicle emissions during the construction phase is dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes.

All construction traffic will route via the new access on Boherboy Road, which will act as the single point of entry and exit for the duration of the works. It is assumed that a total of 810 movements/day will be generated during peak construction activities with 81 HGV vehicles

The EPUK & IAQM Land-Use Planning & Development Control: Planning for Air Quality (2017) indicative criteria as shown in Table 8-8-8 suggests that an air quality impact assessment due to changes in construction traffic flows is required for this project. Therefore, a DMRB Screening Method assessment has been undertaken.

The Boherboy road is used in the assessment with the existing residential receptor R1 as shown in Figure 8-8:2: Residential Receptors used in the DMRB Assessment.

Table 8-8-17 indicates the increase in overall traffic compared to baseline traffic volumes for the assumed year of construction 2030. Traffic volumes for the 2030 scenario are based on the 2024 Do Minimum flows along the affected road network.

Table 8-8-17: Construction-related additional traffic vs baseline conditions

Location	2030 construction traffic					
	AADT	HGV	Construction Flows	% HGV Construction Flows	AADT (During Construction) 2030	%HGV
Boherboy Road (Site 5)	5218	5%	810	81 (10%)	6028	5.70%
Access Rd No.1	0	0	810	81 (10%)	810	10%

A speed of 60 Kph has been used for Boherboy Road and a speed of 20 Kph has been assumed for Access Road No.1 in the DMRB Screening Assessment.

The annual mean PM_{10} concentration of 10.4 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as a background concentration in the DMRB model to predict the PM_{10} concentration at the receptor location R1 during construction.

The predicted NOx and PM_{10} concentrations at the receptor location R1 is presented in Table 8-8-18.

Table 8-8-18: DMRB Screening Method predicted NOx and PM_{10} concentrations at the receptor location R1 in the Year of Opening 2030, Without and With Development (µg/m^3).

Location	DMRB Predicted Annual Mean NOx (µg/m^3) at R1.	DMRB Predicted Annual Mean PM_{10} (µg/m^3) at R1.
@ R1 Without Development	1.43	10.54
@ R1 With Development	1.83	10.58

Using the NO_x to NO_2 calculator, the DMRB Screening Method predicted NO_x concentrations have been used to predict the NO_2 concentrations at the receptor location R1. The annual mean NO_2 concentration of 12.1 µg/m^3 and the mean NO_x concentration of 25.2 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as the background concentration in the NO_x to NO_2 calculator to predict the NO_2 concentration at the receptor location R1.

The predicted NO_2 and PM_{10} concentrations at the receptor location in the construction year 2030 are presented in Table 8-8-19.

Table 8-8-19: Predicted Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) concentrations at the receptor location R1 in the Year of Opening 2032, Without and With Development ($\mu g/m^3$).

Location and Scenario	Annual Mean NO_2 ($\mu g/m^3$)	Annual Mean PM_{10} ($\mu g/m^3$)
@ R1 Without Development	12.79	14.89
@ R1 With Development	12.98	14.90

The predicted NO_2 and PM_{10} concentrations have been compared with the relevant Air Quality Standard Regulations 2011 (S.I. No. 180 of 2011) (See Table 8-8-1). The results of the DMRB Screening Method and subsequent Air Quality Impact Assessment for NO_2 and PM_{10} indicate that there will not be an exceedance of the relevant Air Quality Limit Values for NO_2 and PM_{10} at the sensitive receiver (R1) during construction

Table 8-8-20 summarises the description of magnitude of impact on NO_2 and PM_{10} concentrations at the receptor locations in the year of opening 2030, in accordance with the rationale for describing the impact of the proposal derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) Land-Use Planning & Development Control: Planning for Air Quality (January 2017).

Table 8-8-20: Description of magnitude of impact in terms of NO_2 and PM_{10} concentrations at the receptor location R1 during construction in 2030.

Location and Scenario	Absolute Change in Year of Opening	Relative Change in % of AQAL	Percentage predicted concentration relative to AQAL	Predicted Impact
NO_2 @ R1 – With Dev.	0.19	0.48%	32.45%	Negligible
PM_{10} @ R1 – With Dev.	0.01	0.02%	37.25%	Negligible

As outlined in *Section 7 Assessing Significance* of the EPUK & IAQM guidance document a judgment of significance should be made by a competent professional. The results of the DMRB Screening Method and subsequent Air Quality Impact Assessment indicate that here is no potential for significant impacts to air quality during construction as a result of traffic emissions. Existing residents in the area will not experience a significant air quality impact.

In terms of annual mean NO_2 and PM_{10} concentrations from construction traffic emissions, there will be a negligible impact (See Table 8-8-9). The long-term average concentration at R1 during the construction phase will be less than 75% of the relevant Air Quality Assessment Level (AQAL) and the percentage change in concentration will be <1% of the AQAL.

8.5.2 Operational Phase

8.5.2.1 Air Quality Impact due to Traffic Emissions

The air quality impact assessment due to changes in traffic flows is based on assessing existing and predicted traffic flows for the surrounding road network. The traffic flows on the surrounding road network for the base year 2025 and the proposed year of opening 2032 'do nothing' and 'do something' assessment scenarios are shown in Table 8-8-21, as supplied by Pinnacle Engineering.

The study area for the assessment encompasses the local and strategic road network surrounding the site, including Boherboy Road (L2008) as the primary site access route, the connecting N81 corridor, and the adjacent Carrigmore and Corbally residential estates. The wider context also includes links to Fortunestown and Citywest, which provide access to higher-order road, cycle, and public transport networks, including the Luas Red Line and Dublin Bus services

Primary vehicular access to the development will be via Boherboy Road (Access No. 1), via Corbally Estate (Access No. 2) and via Carrigmore (Access No. 3) as shown in Figure 8-8:2.

Table 8-8-21: Predicted AADT traffic flows for Baseline scenario (2025), and Future traffic flows scenario 2032 without and with the proposed development in operation.

AADT Traffic Flow	Baseline 2025		Opening Year 2032			
	AADT	%HGV	AADT (Do Nothing) 2032	Development Flows	AADT (Do Something) 2032	%HGV (Do Nothing & Do Something)
Boherboy Road (Site 5)	4,826	3.92%	5,267	429	5,696	5%
Access Road No.1	0	0%	0	429	429	0%
Boherboy Rd/N81 (Site 6)	14,487	8.01%	15,810	120	15,930	5%
N82 Citywest Road/Corbally Access (Site 8)	15,147	5.51%	16530	2,034	18,564	5%
Access Road No.2 (Corbally)	0	0%	0	2,034	2,034	0%
Fortunestown Lane/Carrigmore (2)	7,578	1.63%	8,270	1,357	9,627	5%
Access Road No.3 (Carrigmore)	0	0	0	1,357	1,357	0%

Based on the EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality (2017) indicative criteria for requiring an air quality assessment, as shown in Table 8-8-8 a DMRB assessment has been undertaken.

The DMRB Screening Method has been used to predict the change in pollutant concentrations due to traffic emissions at the selected sensitive receptors in the baseline year (2025) and in the year of opening 2032 without and with the Proposed Development. These predictions are based on the Annual Average Daily Traffic flow in proximity to the Proposed Development as shown in

Table 8-8-21.

For the DMRB Screening Assessment, the following assumptions have been made;

- For a busy junction, assume that traffic approaching the junction slows to an average of 20kph. These should allow for a junction, which potentially suffers from a lot of congestion and stopping traffic. In general, these speeds are relevant for approach distances of approximately 25m; and
- For other junctions (non-motorway) and roundabouts where some slowing of traffic occurs, assume that the speed is 10kph slower than the average free flowing speed.

[From Part IV of the Environment Act 1995 Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management Technical Guidance (TG22) March 2022]. Table 8-8-22 shows the speeds used in the DMRB assessment for the road links assessed.

Table 8-8-22: Speeds used in the DMRB assessment

Road Link	Traffic Speed (Kph)		
	Baseline 2025	Opening Year 2032 Do Nothing	Opening Year 2032 Do Something
Boherboy Road (5)	60 Kph	60 Kph	30 Kph
Access Road No.1	-	-	20 Kph
N81 (6)	80 Kph	80 Kph	80 Kph
Citywest Road (8)	50 Kph	50 Kph	50 Kph
Access Road No.2 (Corbally)	30 Kph	30 Kph	30 Kph
Fortunestown Road (2)	50 Kph	50 Kph	50 Kph
Access Road No.3 (Carrigmore)	30 Kph	30 Kph	30 Kph

The annual mean PM_{10} concentration of 10.4 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as a background concentration in the DMRB model to predict the PM_{10} concentration at the receptor locations during operation.

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The predicted NO_2 and PM_{10} concentrations at the receptor location in the base year 2025 are presented in Table 8-8-23.

Table 8-8-23: DMRB Screening Method predicted NOx and PM_{10} concentrations at the receptor location R1 in the baseline year 2025 (µg/m^3).

Location and Scenario	Annual Mean NOx (µg/m^3)	Annual Mean PM_{10} (µg/m^3)
@ R1 Base Year	2.66	10.65
@ R2 Base Year	1.30	10.53
@ R3 Base Year	0.17	10.42
@ R4 Base Year	0.06	10.41

As per LA105 Air Quality guidance, modelling of PM_{10} is only required for the base year to demonstrate that the air quality limit values in relation to PM_{10} are not breached. Where the air quality modelling indicates exceedances of the PM_{10} air quality limits in the base year then PM_{10} should be included in the air quality model in the do minimum and do something scenarios. Concentrations of PM_{10} were modelled for the baseline year of 2025. The modelling showed that concentrations were in compliance with the annual limit value of 20 µg/m^3 at all receptors assessed. Therefore, further modelling for the opening year is not required. The highest predicted concentration of 10.65 µg/m^3 is 53% of the annual limit value at the worst case receptor.

The predicted NOx concentrations at the receptor locations are presented in Table 8-8-24.

Table 8-8-24: DMRB Screening Method predicted NOx concentrations at the receptor location R1 in the Year of Opening 2032, Without and With Development (µg/m^3).

Location	DMRB Predicted Annual Mean NOx (µg/m^3) Without Development	DMRB Predicted Annual Mean NOx (µg/m^3) With Development
@ R1	1.31	1.42
@ R2	1.42	1.82
@ R3	0.18	1.10
@ R4	0.05	0.38

Using the NO_x to NO_2 calculator, the DMRB Screening Method predicted NO_x concentrations have been used to predict the NO_2 concentrations at the receptor locations R1-R4 at the façade of the Proposed Development. The annual mean NO_2 concentration of 12.1 µg/m^3 and the mean NO_x concentration of 25.2 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as the background concentration in the NO_x to NO_2 calculator.

The predicted NO_2 concentrations at the receptor locations in the Year of Opening are presented in Table 8-8-25.

Table 8-8-25: Predicted Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) concentrations at the receptor location R1 in the Year of Opening 2032, Without and With Development (µg/m^3).

Location	DMRB Predicted Annual Mean NO_2 (µg/m^3) (µg/m^3) Without Development	DMRB Predicted Annual Mean NO_2 (µg/m^3) (µg/m^3) With Development
@ R1	12.73	12.78
@ R2	12.78	12.98
@ R3	12.19	12.63
@ R4	12.12	12.28

The predicted NO_2 concentrations have been compared with the relevant Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) (See Table 8-8-1). The results of the DMRB Screening

Method and subsequent Air Quality Impact Assessment for NO_2 indicate that there will not be an exceedance of the relevant Air Quality Limit Values for NO_2 at the Proposed Development.

Table 8-8-26 summarises the description of magnitude of impact on NO_2 concentrations at the receptor locations in the year of opening, in accordance with the rationale for describing the impact of the proposal derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) Land-Use Planning & Development Control: Planning for Air Quality (January 2017) as shown in Table 8-8-9.

In terms of annual mean NO_2 concentrations from road traffic emissions, as impact descriptors for individual receptors as outlined in Table 8-8-9., there will be a negligible impact. The long-term average concentration at receptors will be less than 75% of the relevant Air Quality Assessment Level (AQAL) and the percentage change in concentration will be <2% of the AQAL.

Table 8-8-26: Description of magnitude of impact in terms of NO_2 concentrations at the receptor locations in the year of opening 2032.

Location and Scenario	Absolute Change in Year of Opening	Relative Change in % of AQAL	Percentage predicted concentration relative to AQAL	Predicted Impact
NO_2 @ R1 – With Dev.	0.05	0.12%	31.95%	Negligible
NO_2 @ R2 – With Dev	0.20	0.50%	32.45%	Negligible
NO_2 @ R3 – With Dev	0.44	1.10%	31.58%	Negligible
NO_2 @ R4 – With Dev	0.16	0.40%	30.70%	Negligible

As outlined in *Section 7 Assessing Significance* of the EPUK & IAQM guidance document a judgment of significance should be made by a competent professional. The results of the DMRB Screening Method and subsequent Air Quality Impact Assessment indicate that there will be a negligible impact on air quality in the vicinity of the development due to associated traffic flows. Existing residents in the area and future development residents will not experience a significant air quality impact. A detailed atmospheric dispersion model of traffic emissions is not required based on the existing air quality and the future predicted air quality impact due to traffic flows in the area of the development.

The potential impact of the proposed development on ambient air quality in the operational stage is considered long-term, localised, negative and imperceptible and therefore, no mitigation is required.

8.5.3 Potential Cumulative Impacts

The future predicted traffic flows on the surrounding road network due to the Proposed Development include for the cumulative impact of other Proposed Developments in the surrounding area. Due to the relatively small additional traffic volume predicted to be generated due to the Proposed Development, including other proposed developments in the area, there will be a negligible change in air quality as predicted. Therefore, the cumulative operational air quality impact of any permitted developments and the Proposed Development

are predicted to cause an insignificant air quality impact during the operational phase in the short term and long term.

Potentially, the most significant cumulative impact may occur if the construction phase of various proposed projects overlap with other developments in the area. However, should the construction phase of the Proposed Development and other permitted developments coincide, it is predicted that once appropriate construction mitigations are put in place during construction, construction air quality and dust impacts will not be significant.

In relation to the in-combination construction and/or operational impact of the Proposed Development, with existing and approved projects in the area, the list of existing and approved projects supplied by DNV has been reviewed.

As per IAQM guidance it is recommended:

If applicable, hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

Therefore, a list of projects within 500m from the site were considered. Only 1 application is within 500m from the Proposed Development:

- Reference: SD24A/0092W, Proposal for development of a residential scheme of 73 no. units comprising a mix of 6 no. houses, 59 no. own-door duplexes and 8 no. apartments arranged in 4 blocks set around a central amenity space. located within the curtilage of protected structures on lands located adjacent to Drury Mills and Drury Park, Swiftbrook, Saggart, Co. Dublin, 0.24km from the Proposed Development. This development was granted permission in April 2025. An appeal as lodged in May 2025 (ABP-322539-25)

  If the construction period of this project is to overlap with the Proposed Development, there is a potential to impact on air quality in the area. This project could be considered a medium/high risk site, therefore regular liaison meetings should be held to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. This development is required to make suitable provision for dust minimisation during construction works, in accordance with its own planning conditions.

Should the construction phases of the Proposed Development and other permitted developments coincide, it is predicted that once appropriate construction mitigations are put in place during construction, construction air quality impacts will not be significant. Future projects of a large scale would need to conduct an EIAR to ensure that no significant construction and/or operational air quality impacts will occur as a result of those developments.

8.5.4 “Do Nothing” Impact

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased traffic volumes and associated air emissions will also not occur. The ambient air quality at the site will remain as per the existing baseline in Section 8.3 and will change in accordance with trends within the

surrounding area (including impacts from new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of air quality.

8.6 Avoidance, Remedial & Mitigation Measures

8.6.1 Construction Phase

Construction site dust control measures and good construction site management and practice is capable of effectively mitigating the potential for significant impact of fugitive dust emissions. Therefore, the potential for fugitive dust emission effects at the nearest sensitive receptors will be controlled to ensure impacts are of negligible significance.

The IAQM Guidance recommends that significance is only assigned to the effect after considering the construction activity with mitigation. Therefore, the detailed mitigation measures have been defined in a form suitable for implementation by way of a planning condition and will be included in a Construction Environmental Management Plan.

There are 18 sensitive residential properties <20m from the site boundary. Using the IAQM methodology for the assessment of air quality impacts from construction activities as shown in Table 8-8-16 has indicated that the risk of dust soiling for demolition is **negligible** and **high risk** for earthworks, construction and trackout. The impacts on human health are **negligible** for demolition and **low risk** for earthworks, construction and trackout. The ecological impacts are **negligible** for demolition and **low risk** for earthworks, construction and trackout.

In accordance with the IAQM Guidance, the highest risk category should be applied when determining proposed mitigation measures. Therefore, the mitigation measures applicable to a **high risk site** will be applied:

<u>General Measures</u>

Communications

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

Dust Management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

  Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the

German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28 - 32 days.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in the logbook.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary if applicable, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

The IAQM Guidance Mitigation Measures applicable to the specific works undertaken are as follows:

Measures specific to earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures specific to construction

- Avoid scabbling (roughening of concrete surfaces) if possible
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures specific to trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being

continuously in use.

- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

8.6.2 Operational Phase

There is no requirement for mitigation measures relating to the operational phase. The development has been shown to be not significant in terms of air quality. Future proposed engine improvements and a transition to electric vehicles will result in continued improvement in urban air quality into the future.

In terms of space heating, the proposal is expected to utilise electric heating for both hot water and space heating. Therefore, there will be no pollutant emissions to atmosphere from traditional combustion sources, such as oil or gas boiler heating systems.

8.6.3 "Worst Case" Scenario

A worst case scenario has been assessed in terms of potential construction and operational air quality impacts.

8.7 Residual Impacts

When the dust minimisation measures detailed in the mitigation section of this Chapter are implemented, residual fugitive emissions of dust from the Site will be insignificant and pose no nuisance at nearby receptors. Therefore, the overall impact of the construction phase is considered short-term, negative, localised and not significant/imperceptible.

In relation to air quality during operational phase of the Proposed Development, compliance will be maintained with all relevant ambient air quality standards and guideline values and thus the impact of the development is not significant in the long term.

The results of the DMRB Air Quality Screening assessment indicate that the residual impacts of the Proposed Development on air quality are predicted to be imperceptible for all

parameters with respect to the operational phase local air quality assessment for the long and short term with a negligible impact with regard to all pollutants at receptors in the long term.

8.8 Monitoring

8.8.1 Construction Phase

Monitoring of air quality and dust related impacts will be required during the construction stage only of the Proposed Development. The monitoring activities are to:

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28 - 32 days.

8.8.2 Operational Phase

No operational monitoring is required.

8.9 Interactions

Reference has been made to the project description provided by the EIAR co-ordinator, project drawings provided by the project architects and traffic flow projections associated with the development provided by the traffic consultants.

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between human beings 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 and therefore the predicted impact is long term and neutral with respect to human beings.

Interactions between air quality and traffic 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 imperceptible.

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils and the water environment (hydrology) in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that interactions between air quality and land and soils and hydrology will be short-term and imperceptible.

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised and the effect on biodiversity will be short term, imperceptible and neutral.

No other significant interactions with air quality have been identified.

8.10 Difficulties Encountered When Compiling

There were no difficulties encountered when compiling this assessment.

8.11 Conclusion

When the dust minimisation measures detailed in the Section 8.6 are implemented, residual fugitive emissions of dust from the Proposed Development are predicted to be short-term, negative, localised and not significant/imperceptible.

The best practice dust mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be short-term, localised, negative and imperceptible with respect to human health.

Potential impacts to air quality during the operational phase of the proposed development are as a result of increased traffic volumes on the local road network. A screening assessment of NO_2 and PM_{10} emissions determined that impacts to air quality will be imperceptible as a result of changes in traffic in the local area. The operational phase of the proposed development will have an imperceptible, negative and long-term impact on air quality.

In conclusion, there are no significant impacts to air quality or climate predicted as a result of the proposed development once the mitigation measures outlined in this chapter are implemented.

8.12 References

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DEFRA (2020), NOX to NO2 Calculator Version 8.1, available online from https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/

DEHLG (2004). Quarries and Ancillary Activities, Guidelines for Planning Authorities

DEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities

EPA (2022). Guidelines on Information to Be Contained in Environmental Impact Statements

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IAQM (2024). Guidance on the Assessment of Dust from Demolition and Construction

TII (2022), Air Quality Assessment of Specified Infrastructure Projects Overarching Technical Guidance, PE-ENV-01106

UK Highways Agency (2007) Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1 - HA207/07 (Document & Calculation Spreadsheet)

UKHA (2024). Design Manual for Roads and Bridges – LA 105 Air Quality, version 0.1.0

WHO (2021). Air Quality Guidelines

Directives and Legislation

Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air

Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management and daughter directives

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

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

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

Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending

Directive 2003/35/EC and repealing Directive 2001/81/EC

S.I. No. 180 of 2011 Air Quality Standards Regulations 2011