Chapter 12
Air Quality

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12. AIR QUALITY

12.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) sets out the methodology used to undertake the assessment (Section 12.3), describes the existing environment herein referred to as the 'baseline environment' (Section 12.4), examines the predicted impacts of the proposed development (Section 12.6), proposes mitigation and monitoring measures (Section 12.7 and Section 12.8 respectively), and identifies residual effects (Section 12.9). This chapter should be read in conjunction with the other relevant Chapters of this EIAR.

12.2 Legislation, Policy and Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality are summarised below.
In addition to specific air quality guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- EPA (2022) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines);
- Department of Environment, Community and Local Government (August 2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*; and
- European Commission (2017) *Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report*.

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

- TII (December 2025) *Air Quality Assessment of Specified Infrastructure Projects - Overarching technical Document PE-ENV-01106*PE-ENV-01106;
- TII (December 2025) *Air Quality Assessment of Proposed National Roads - Standard PE-ENV-01107*;
- IAQM (2024) *Guidance on the Assessment of Dust from Demolition and Construction V2.2 (Institute of Air Quality Management* (hereafter referred to as the IAQM Guidelines); and
- IAQM (2020) *A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)*.

12.3 Methodology

12.3.1 Study Area

For the construction phase, the study area for this assessment covers the area of the proposed development, and the area either side of the proposed development up to a maximum distance of 250 metres (m) during the Construction Phase as per the IAQM Guidance (IAQM, 2024). The methodology for determining this study area is described in Section 12.3.4 and the sensitive receptors identified are shown in Section 12.4.3.

For the operational phase, the study area covers all sensitive human and ecological receptors within 200 m of affected road links. The criteria for affected road links are defined in Section 12.3.4.2.

12.3.2 Criteria for Rating of Impacts

12.3.2.1 Ambient Air Quality Standards

National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland and the European Parliament and Council of the European Union, have set limit values in ambient air for a range of air pollutants to reduce the risk to health from poor air quality. These limit values or "Air *Quality Standards"* are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive (EU) 2024/2881 *of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast)*. This directive supersedes EU 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* (CAFE Directive). It sets out new air quality standards for pollutants to be reached by 2026 and 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines and also includes limit values applicable until 2030.

The Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022) (the Air Quality Standards Regulations 2022) further transposed the CAFE Directive and revoked the Air Quality Standards Regulations 2011, as amended. With the adoption of Directive (EU) 2024/2881, Ireland must similarly transpose this directive into national law, i.e. update the Air Quality Standards Regulations, before December 2026.

In relation to the proposed development, the applicable limit values are for nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). Table 12-1 outlines the pre-2030 and post-2030 limit values for the specified pollutants.

Table 12-1 Ambient Air Quality Limit Values

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	**Pre-2030 Limit Value (to be attained by 2026 and applicable until 2030)**	**Limit Type**	**Post-2030 Limit Value (to be attained by 2030)**
NO_2	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m³	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m³
	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m³
	Annual limit for protection of human health	40 µg/m³	Annual limit for protection of human health	20 µg/m³
PM_{10}	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m³	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m³
	Annual limit for protection of human health	40 µg/m³	Annual limit for protection of human health	20 µg/m³
$PM_{2.5}$	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m³
	Annual limit for protection of human health	25 µg/m³	Annual limit for protection of human health	10 µg/m³

12.3.2.2 WHO Air Quality Guidelines and Clean Air Strategy

In April 2023, the Government of Ireland published the *Clean Air Strategy for Ireland* (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (Table 12-2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m³. The strategy also acknowledges that "*meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2*".

Annex II of Directive (EU) 2024/2881 gives target assessment thresholds which align with the clean air strategy 2040 targets or final WHO targets. Directive (EU) 2024/2881 states that *"Member States shall endeavour to achieve and preserve the best ambient air quality and a*

high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II."

These assessment thresholds relate to monitoring of ambient air quality by Member States, where "*exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years*."

Table 12-2 WHO Air Quality Guidelines

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	24-hour limit for protection of human health	-	-	25 µg/m³
	Annual limit for protection of human health	20 µg/m³	-	10 µg/m³
PM (as PM_{10})	24-hour limit for protection of human health	75 µg/m³	50 µg/m³	45 µg/m³
	Annual limit for protection of human health	30 µg/m³	20 µg/m³	15 µg/m³
PM (as $PM_{2.5}$)	24-hour limit for protection of human health	37.5 µg/m³	25 µg/m³	15 µg/m³
	Annual limit for protection of human health	15 µg/m³	10 µg/m³	5 µg/m³

The limit values set out to the left hand side of Table 12-1 stipulated in Table 2 of Annex 1 of Directive (EU) 2024/2881 are applicable air quality limit values for the purposes of this assessment. These limit values are applicable for the construction phase of the proposed development, with construction assumed to be completed by 2030. The limit values set out to the right hand side of Table 12-1 and in Table 1 of Annex I of Directive (EU) 2024/2881 are applicable to the operation phase (post-2030) of the proposed development.

12.3.2.3 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and the EU ambient air quality standards outlined in Table 12-1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to dust soiling, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for dust soiling with respect to the proposed development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one-year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the TA Luft limit of 350 mg/m^2/day to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development.

12.3.3 Survey Methodology

In accordance with TII standard PE-ENV-01107, given the nature of the proposed development being a greenway scheme, no monitoring surveys were required for the air

quality assessment. The baseline air quality environment was established using available long-term EPA monitoring data for representative locations (see Section 12.4).

12.3.4 Construction Phase Assessment Methodology

12.3.4.1 Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024) outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of the IAQM guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025).
The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts. These are:

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

The magnitude of each of the four categories is divided into large, medium or small scale depending on the nature of the activities involved. The criteria for determining the category for the works involved are outlined in Table 12-3; these are based on the IAQM guidance (IAQM, 2024). The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 12-3 IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	**Medium**	**Large**
Demolition		
• Total building volume <12,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <6m above ground • Demolition during wetter months	• Total building volume 12,000 - 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
Earthworks		
• Total site area <18,000m^2 • Soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • Formation of bunds <3m in height • Earthworks during wetter months	• Total site area 18,000m^2 - 110,000m^2 • Moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • Formation of bunds 3 – 6m in height	• Total site area >110,000m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • Formation of bunds >6m in height
Construction		
• Total building volume <12,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber)	• 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 HDV (>3.5 t) outward movements in any one day • Surface material with low potential for dust release • Unpaved road length <50m	• 20 – 50 HDV (>3.5 t) outward movements in any one day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50 – 100m	• >50 HDV (>3.5 t) outward movements in any one day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length >100m

As noted in the TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025), 'the criteria outlined in the IAQM guidance is predominately focused on the construction of buildings rather than on linear infrastructure projects such as roads'. Specifically in relation to determining dust emissions from construction activities, the guidance states 'the IAQM criteria to define the potential dust magnitude is not directly applicable for linear infrastructure schemes' (TII, 2025). In accordance with the guidance, where a linear infrastructure project is being assessed, a 'cautious approach' should be adopted and the

magnitude in relation to construction works should be defined as large unless otherwise justified by the air quality practitioner carrying out the assessment.

The sensitivity of the area must then be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity. Table 12-4 outlines the criteria for determining the sensitivity of the area to dust soiling, dust-related human health effects and dust-related ecological effects as per the IAQM guidance (IAQM, 2024).

Table 12-4 Criteria for Determining the Sensitivity of the Area

Sensitivity of the Area to Dust Soiling Effects on People and Property					
Receptor Sensitivity	**Number of Receptors**	**Distance From Source (m)**			
		<20	**<50**	**<100**	**<250**
High	>100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

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

Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	**Distance from Source (m)**	
	<20	**<50**
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Once the dust emission magnitude and sensitivity of the area have been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling, human health and ecological effects. The level of risk associated with each activity is determined using the criteria in Table 12-5.

Table 12-5 IAQM Criteria to Determine Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

12.3.4.2 Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. The TII guidance is specific to infrastructure projects including greenways, therefore the approach can be applied to the proposed development.

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

As per Chapter 5 Traffic and Transportation in Volume 2 of this EIAR, it has been determined by the traffic specialist that construction stage traffic is not predicted to exceed the criteria above. Therefore, a detailed air quality assessment of construction stage traffic emissions has been scoped out as there is no potential for significant impacts to air quality.

12.3.5 Operational Phase Assessment Methodology

12.3.5.1 Traffic Assessment

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 12.3.4.2 were used to determine if any road links are affected by the

proposed development and require inclusion in a detailed air dispersion modelling assessment.

As per Chapter 5 Traffic and Transportation in Volume 2 of this EIAR, it has been determined by the traffic specialist that operation stage traffic is not predicted to exceed the criteria above. Therefore, a detailed air quality assessment of operation stage traffic emissions has been scoped out as there is no potential for significant impacts to air quality.

12.3.6 Difficulties Encountered

There were no difficulties encountered when undertaking this assessment.

12.4 Baseline Environment

12.4.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (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 nearest representative weather station collating detailed weather records is Shannon Airport meteorological station, which is located approximately 39.2km east of the site. Shannon Airport meteorological data has been examined to identify the prevailing wind direction over a five-year period (see Plate 12.1) (Met Éireann, 2025). For data collated during five representative years (2020 – 2024), the predominant wind direction is westerly to south-westerly.

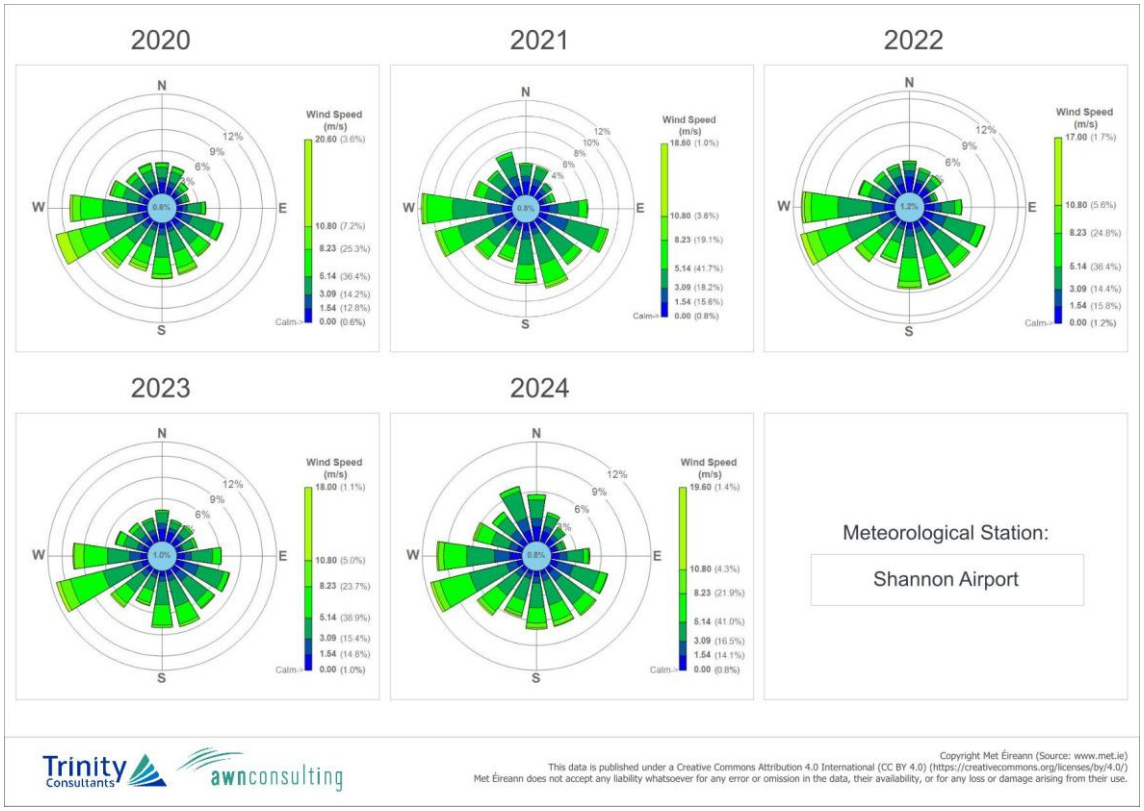

Plate 12.1 Wind Roses for Shannon Airport Meteorological Station

12.4.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2024*" (EPA, 2025). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2025).

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022) four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2025). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development is within Zone D (EPA, 2025). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

12.4.2.1 NO_2

Long-term NO_2 monitoring was carried out at the representative Zone D background locations of Emo Court, Kilkitt, Castlebar and Edenderry for the period 2020 – 2024 (EPA, 2025). Long term average concentrations are significantly below both the pre-2030 and po-2030 annual average limit values. Results range from 2 – 10 µg/m^3 for the relevant background locations, with an average annual mean concentration of 5 µg/m^3 (Table 12-6). Based on this data, a conservative estimate of the current background NO_2 concentration for the region of the proposed development is 5 µg/m^3.

Table 12-6 Trends in Zone D Air Quality - Nitrogen Dioxide (NO_2)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Emo Court (Rural Background)	Annual Mean NO_2 (µg/m³)	3	4	3	2	3
	1-hr Mean NO_2 Values >200 µg/m³	0	0	0	0	0
Kilkitt (Rural Background)	Annual Mean NO_2 (µg/m³)	2	2	2	2	2
	1-hr Mean NO_2 Values >200 µg/m³	0	0	0	0	0
Castlebar (Suburban Background)	Annual Mean NO_2 (µg/m³)	6	6	8	7	7
	1-hr Mean NO_2 Values >200 µg/m³	0	0	0	0	0
Edenderry (Suburban Background)	Annual Mean NO_2 (µg/m³)	-	9	7	9	10
	1-hr Mean NO_2 Values >200 µg/m³	0	0	0	0	0

12.4.2.2 PM_{10}

Continuous PM_{10} monitoring was carried out at representative Zone D locations from 2020 - 2024: Askeaton, Enniscorthy, Macroom and Tipperary Town (Table 12-7). Levels range from 7 - 16 µg/m³ over the five-year period with at most 7 exceedances (in Macroom) of the 24-hour limit value of 50 µg/m³ in 2022 (35 exceedances are permitted per year) (EPA, 2025). The average annual mean concentration over the five-year period was 12 µg/m³. Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the proposed development is 12 µg/m³.

Table 12-7 Trends in Zone D Quality - PM_{10}

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Askeaton (Rural Background)	Annual Mean PM_{10} (µg/m³)	7	9	9	-	8
	24-hr Mean > 50 µg/m³ (days)	0	0	0	-	0
Enniscorthy (Suburban Background)	Annual Mean PM_{10} (µg/m³)	15	14	15	13	14
	24-hr Mean > 50 µg/m³ (days)	5	1	5	-	3
Macroom (Suburban Background)	Annual Mean PM_{10} (µg/m³)	15	15	16	11	12
	24-hr Mean > 50 µg/m³ (days)	6	2	7	-	0
Tipperary Town (Suburban Background)	Annual Mean PM_{10} (µg/m³)	12	13	14	11	11
	24-hr Mean > 50 µg/m³ (days)	1	3	3	-	0

12.4.2.3 $PM_{2.5}$

Continuous $PM_{2.5}$ monitoring was carried out at representative Zone D locations from 2020 - 2024: Shannon Estuary / Askeaton Co. Limerick, Enniscorthy, Macroom and Tipperary Town (Table 12-8). Levels range from 4 - 12 µg/m³ over the five-year period, with an average annual mean concentration of 8 µg/m³ (EPA, 2025). Based on the EPA data, a conservative estimate of the current background $PM_{2.5}$ concentration in the region of the proposed development is 8 µg/m³.

Table 12-8 Trends in Zone D Quality - $PM_{2.5}$

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Shannon Estuary / Askeaton Co. Limerick (Rural Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	4	6	5	5	5
Enniscorthy (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	12	10	10	9	9
Macroom (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	11	10	11	7	8
Tipperary Town (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	8	9	9	7	7

12.4.2.4 Summary

Based on the above information the air quality in the Zone D area is generally good, with concentrations of the key pollutants below the relevant pre-2030 and post-2030 limit values.

12.4.3 Sensitivity of the Receiving Environment to Dust

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM, 2024) prior to assessing the impact of dust from a proposed development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas (refer to **Table 12-4**) are taken into consideration.

The impact to air quality from construction phase activities is assessed at sensitive receptors within 250m of the proposed development boundary. As mitigation will be applied across the whole site, the entirety of the proposed development has been assessed together.

In terms of receptor sensitivity to dust soiling, there are more than 10 residential properties (high sensitivity receptors) within 20m of the proposed works area. Based on the IAQM criteria outlined in Table 12-4, the sensitivity of the area to dust soiling is considered high.

In addition to the sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 11 µg/m^3 and as discussed above, there are more than 10 high sensitivity receptors within 20m of the site boundary. Based on the IAQM criteria outlined in Table 12-4, the worst-case sensitivity of the area to dust-related human health impacts is considered low.

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust from construction sites deposited on vegetation may create ecological stress within the local plant community. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 250m for the site entrance. The following ecological sites are located within 20m of the proposed development:

- Lower River Shannon Special Area of Conservation (SAC);
- River Shannon and River Fergus Estuaries Special Protection Area (SPA); and

- Poulnasherry Bay Proposed Natural Heritage Area (pNHA).

Based on the IAQM criteria outlined in Table 12-4 the worst-case sensitivity of the area to dust-related ecology impacts is considered high.

Figure 12.1 in Volume 3 of the EIAR shows the construction dust study area of 250m from the proposed development boundary, with the worst-case receptors located within 20m of the boundary.

12.5 The 'Do Nothing' Scenario

In the Do-Nothing scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc). It is noted that in the Do-Nothing Scenario there will be no greenway provided at the site, and therefore less opportunity for a modal shift and associated reduction in traffic.

Since a detailed air quality assessment of operation stage traffic emissions for the proposed development has been scoped out (refer to Section 12.3.5.1), no further assessment of the Do-Nothing scenario has been carried out in relation to air quality.

12.6 Description of Potential Impacts

12.6.1 Potential Construction Impacts

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 250m of a construction site, the majority of the deposition occurs within the first 50m (IAQM, 2024).

The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction.

A review of Shannon Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly (Section 12.4.1). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2mm. A review of historical 30-year average data for Shannon Airport meteorological station indicates that on average 223 days per year have rainfall over 0.2mm (Met Éireann, 2025). Therefore, it can be determined that 61% of the time dust generation will be reduced due to natural meteorological conditions.

To determine the level of dust mitigation required during construction of the proposed development, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (Section 12.4.3). The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts (refer to Section 12.3.4.1). These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

12.6.1.1 Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either small, medium or large depending on the scale of the works involved. The magnitude of each activity (Table

12-9) has been determined below for the proposed development using the criteria in Table 12-3.

Table 12-9 Potential Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	N/A	No demolition activities are included as part of the proposed development.
Earthworks	Large	The total area of the site is greater than 110,000m^2.
Construction	Large	A conservative magnitude of 'large' is chosen based on TII guidance for linear infrastructure projects (TII, 2025).
Trackout	Small	There will be less than 20 HDV movements per day during the construction phase.

12.6.1.2 Determining the Sensitivity of the Area

As determined in Section 12.4.3, there are more than 10 residential properties within 20m of the proposed development, and several ecological sites are present within 50m of the proposed development boundary. There are less than 100 sensitive receptors within 50m of roads where trackout may occur (up to 250m from the site entrance). The sensitivity of the area to dust soiling, human health impacts and ecological impacts from dust are shown in Table 12-10.

Table 12-10 Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	High	High	Medium
Human Health	N/A	Low	Low	Low
Ecology	N/A	High	High	High

12.6.1.3 Determining the Risk of Dust Impacts

As detailed in Table 12-5, the predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation.

Table 12-11 below provides a summary of the risk of dust impacts for the proposed development.

There is at most a high risk of dust soiling impacts, a low risk of dust-related human health impacts, and a high risk of ecological impacts associated with the proposed works. Without mitigation in place, construction dust will have a ***short-term, direct, localised, negative*** and ***slight*** impact on air quality, which may potentially have a significant effect. As a result, best practice dust mitigation measures associated with high-risk works will be implemented to ensure there are no significant impacts at nearby sensitive receptors (see Section 12.7.1).

The predicted risk of dust impacts has taken a conservative approach and assessed the entirety of the proposed development as a whole. However, as the proposed development is linear in nature, construction works across the entirety of the proposed development site is not likely to take place all at once; land clearance and construction works will likely be undertaken in phases with one or more sections completed before moving to the next.

Therefore, the identified receptors are not likely to be exposed to dust emissions for the entirety of the construction phase. Once construction works have ceased in the area the air quality will return to baseline conditions.

Table 12-11 Risk of Dust Impacts used to Define Site-Specific Mitigation

Potential Impact	Risk of Dust Impacts			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	High Risk	High Risk	Negligible
Human Health	N/A	Low Risk	Low Risk	Negligible
Ecology	N/A	High Risk	High Risk	Low Risk

12.6.1.4 Traffic

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section 12.3.4.

Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and, as such, will not impact significantly during the peak traffic periods.

It can therefore be determined that the construction stage traffic will have a ***short-term, direct, localised, negative*** and ***not significant*** impact on air quality.

12.6.2 Potential Operational Impacts

A detailed air quality assessment was scoped out for the operational stage of the development as per the TII screening criteria (see Section 12.3.5.1). No significant operational stage effects of traffic on air quality are predicted. While some additional traffic will be generated in the vicinity of trailheads, the volume of traffic in question is less than the threshold described in Section 12.3.4.2 above.

It is noted that the greenway will provide some benefits to local air quality as a result of the modal shift attributed to the greenway, although the potential benefits have not been quantified in terms of air quality impacts. The associated benefits to the local community have been assessed in this EIAR in Chapter 6 Population and Chapter 7 Human Health. Further to this, the potential carbon emissions reductions have been assessed in Chapter 13 of this EIAR using TII's carbon tool.

12.7 Mitigation Measures

12.7.1 Construction Phase

The proposed development has been assessed as having a high risk of dust soiling impacts and dust-related ecological impacts, and a low risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities. Therefore, the following dust mitigation measures outlined in **Table 12-12** shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The measures are based on the recommended measures from the IAQM guidance (2024). These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. A preliminary

CEMP is provided in Appendix 4.1 in Volume 4 of this EIAR. The measures are divided into different categories for different activities.

Table 12-12 Construction Phase Site-Specific Mitigation

Mitigation Measure	
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
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 500m 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.
Preparing and Maintaining the Site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Mitigation Measure	
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	Bonfires and burning of waste materials are legally prohibited.
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 is 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 powder 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.
	Record all inspections of haul routes and any subsequent action in a site logbook.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

12.7.2 Operational Stage

There is no mitigation required for the operational phase of the development as no significant impacts to air quality are predicted (refer to Section 12.6.2).

12.8 Monitoring

12.8.1 Construction Phase

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site (as per details displayed at the site entrance) 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 during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. Given the length of the construction site, monitoring locations should be close to nearby sensitive receptors, where prolonged construction activity is taking place or at construction compounds. 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 $mg/m^2/day$ during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

12.8.2 Operational Phase

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be not significant.

12.9 Residual Effects

12.9.1 Construction Phase

Provided the mitigation measures outlined in Section 12.7.1 are implemented throughout the construction phase of the proposed development, the predicted residual air quality impacts during the construction phase are ***short-term, direct, localised, negative*** and ***not significant.***

12.9.2 Operational Stage

As no significant impact has been identified during operation of the proposed development, and no mitigation measures are proposed, the residual impact during operation will be ***negligible***.

12.10 References

Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Environmental Protection Agency (2025) Air Quality in Ireland 2024 (& previous annual reports, 2020-2023)

European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023) Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)

Met Éireann (2026) Met Éireann website: https://www.met.ie/

Transport Infrastructure Ireland (2025) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

World Health Organisation (2021) Air Quality Guidelines 2021 (and previous Air Quality Guideline Reports 1999, 2000, 2006)