MWP

Chapter 08 Air Quality

Newtown Transmission Gas Pipeline and Associated Above Ground Infrastructure

Gas Networks Ireland

November 2025

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8. Air Quality

8.1 Introduction

This chapter describes and evaluates the effect which the proposed development may have on air quality as defined in the *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2022).

The chapter provides a description to the baseline air quality and identification of the sensitivity of the surrounding environment. It then goes on to identify and assess the potential effects on air quality associated with the construction and operational phases of the proposed development. The chapter also includes the mitigation measures to reduce or eliminate potential significant air quality effects.

The chapter concludes with the residual air quality effects, which remain after applying mitigation measures.

8.1.1 Competency of Assessor

The assessment has been prepared by Kieran Barry and reviewed by Olivia Holmes of MWP.

Kieran Barry (BEng, PGDip, CEnv) of MWP. Kieran holds a Degree in Civil and Structural Engineering as well as a Post Graduate Diploma in Environmental Protection. Kieran is an experienced environmental consultant with 9 years' experience working on environmental projects. Kieran works on a variety of infrastructure projects conducting environmental assessments and supporting the delivery of a number of environmental deliverables including Environmental Impact Assessment (EIA) Screening Reports, feasibility and constraints studies, route option assessments and Environmental Impact Assessment Reports (EIAR), including Air Quality EIAR Chapters.

This assessment has been reviewed by Olivia Holmes. Olivia is a Chartered Engineer and Chartered Environmental Practitioner with over twenty years' experience in Environmental Engineering focussing primarily on Environmental Impact Assessment (EIA), Appropriate Assessment (AA) and planning. She has prepared and reviewed a number of chapters for EIARs over her career, for a broad range of projects.

8.1.2 Guidelines and Legislation

The statutory ambient air quality standards in Ireland are set out in the Ambient Air Quality Standards Regulations 2022, which incorporate the ambient air quality limits set out in Directive 2008/50/EC of the European Parliament and of the Council (21st May 2008) on ambient air quality and cleaner air for Europe (hereafter referred to as the CAFÉ Directive) (as amended by Directive EU 2015/1480) for a range of air pollutants. These are discussed further in Section 8.2.1.1.

In addition to the specific statutory air quality standards, the assessment has been prepared in accordance with national and international guidelines and standards, where available. These are summarised below:

- Institute of Air Quality Management (IAQM) guidance document 'Guidance on the assessment of dust from demolition and construction' (IAQM, 2024);
- Clean Air Strategy (Government of Ireland, 2023);
- Air quality assessment of specified infrastructure projects – overarching technical document' (TII, 2022);

- UK Department of Environment Food and Rural Affairs (DEFRA) Part IV of the Environment Act 1995: Local Air Quality Management, LAQM.TG (16) (DEFRA 2018);
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) – LA 105 Air Quality (UKHA 2024);
- World Health Organization (WHO) Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide Global Update 2005 (WHO 2005);
- "Air Quality in Ireland 2024" (EPA, 2025);
- WHO Air Quality Guidelines (WHO, 2021); and
- German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002).

8.2 Scope and Methodology

This report has been prepared in accordance with the *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2022). Potential impacts have been described with regard to Table 3.4 of the guidelines. An overview of the methodology undertaken for the air quality assessment is outlined below:

- Review of background ambient air quality in the vicinity of the proposed development area using available collected baseline and reference data generated by the Environmental Protection Agency (EPA) and other referenced sources;
- A review of the most applicable standards and guidelines has been undertaken in order to define the air quality significance criteria for the construction and operational phases of the proposed development;
- Assessment of potential air quality effects such as construction dust and emissions from construction, operational phase traffic and operational phase emissions; and
- A schedule of mitigation measures has been incorporated where required, to reduce, where necessary, the identified potential air quality effects associated with the proposed development.

8.2.1 Criteria for Rating of Impacts

8.2.1.1 Ambient Air Quality Standards

The EPA manages the ambient air quality monitoring network. In order to protect our health, vegetation and ecosystems, EU directives set down air quality standards in Ireland and the other member states for a wide variety of pollutants. These rules include how we should monitor, assess and manage ambient air quality.

The *Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC)* was published in May 2008 and was transposed into Irish legislation by the *Air Quality Standards Regulations in 2011 (S.I. No. 180 of 2011).*

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values, refer to Table 8-1.

Table 8-1: Ambient Air Quality Standards

Pollutant	Regulation*	Limit Type	Value†
Nitrogen Dioxide (NO_2)	S.I. 180 of 2011	Hourly limit for protection of human health – not to be exceeded more than 18 times per year	200 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Nitrogen Oxides ($NO + NO_2$)	S.I. 180 of 2011	Critical limit for the protection of vegetation and natural ecosystems	30 µg/m^3
Lead	S.I. 180 of 2011	Annual limit for protection of human health	0.5 µg/m^3
SO_2	S.I. 180 of 2011	Hourly limit for protection of human health -not to be exceeded more than 24 times per year	350 µg/m^3
		Daily limit of protection of human health – not to be exceeded more than three times per year	125 µg/m^3
		Critical limit for the protection of vegetation and natural ecosystems (calendar year and winter)	20 µg/m^3
Particulate Matter PM_{10}	S.I. 180 of 2011	24 hour limit for protection of human health – not to be exceeded more than 35 time per year	50 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter $PM_{2.5}$ -	S.I. 180 of 2011	Annual limit for protection of human health	25 µg/m^3
Benzene	S.I. 180 of 2011	Annual limit for protection of human health	5 µg/m^3
Carbon Monoxide (CO)	S.I. 180 of 2011	8-hour limit (on a rolling basis) for protection of human health	10 µg/m^3

8.2.1.2 Dust Deposition Guidelines

The EU ambient air quality standards outlined in **Table 8-1** have set ambient air quality limit values for PM_{10} and $PM_{2.5}$. The concern from a health perspective is focused on particles of dust which are less than 10µm in size.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction and operation phase of a development in Ireland.

However, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350mg/m^2/day averaged over a one month monitoring period at any receptor outside the site boundary.

Dust is commonly measured using the Bergerhoff Method. This method is described in the standards *BS1747 Part 1: Methods for the measurement of air pollution. Deposit gauge*s, and *VDI 4320 Part 2 Measurement of atmospheric depositions - Determination of the dust deposition according to the Bergerhoff method* (the latter published by the German Engineering Institute). Recommendations from the *Department of the Environment, Health and Local Government (DOEHLG, 2004)* apply the TA Luft limit of 350mg/m^2/day to the site boundary for quarries. This limit value will be implemented with regard to dust impacts from construction phase of the proposed development.

This limit value of 350 mg/m^2/day has also been incorporated into *Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006) and* the *Irish Concrete Federation Environment Code (ICF, 2005).*

* CAFE Directive replaces the previous Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management and daughter directives, 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 and 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

† µg/m3 (micrograms per cubic metre); mg/m3 (milligrams per cubic metre)

8.2.1.3 Construction Phase

Dust Assessment

The UK Institute of Air Quality Management (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 demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of 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. Transport Infrastructure Ireland (TII) recommends the use of IAQM guidance in the TII guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a).

The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential effects. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of activities involved. 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.

Construction Phase Traffic

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, 2022), 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. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic as follows:

- 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 10kph or more,
- Peak hour speed change by 10kph or more; or
- A change in carriageway alignment by 5m or greater.

The construction stage traffic for the proposed development does not meet the above scoping criteria and therefore, has been scoped out from any further assessment as there is no potential for significant impacts.

8.2.1.4 Operational Phase

As is the case with the construction phase, the TII guidance considers 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:

- 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 10 kph or more; or
- A change in carriageway alignment by 5m or greater.

The operational phase traffic has been reviewed and none of the impacted road links meet the above criteria. Therefore, a detailed assessment of the impact of operational traffic emissions on ambient air quality is not necessary for the proposed development.

8.3 Baseline Environment

8.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality are the prevailing wind conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutants under the same source strength (i.e. traffic levels) (WHO, 2021). 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. 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 Dublin Airport Station, which is located approximately 5km east of the proposed development. Dublin Airport weather station met data has been examined to identify the prevailing wind direction (see **Figure 8-1**). The predominant wind direction is from a south-westerly direction, with a mean wind speed of 5.4m/s over the 30 year period of 1990-2020 (Met Éireann, 2025).

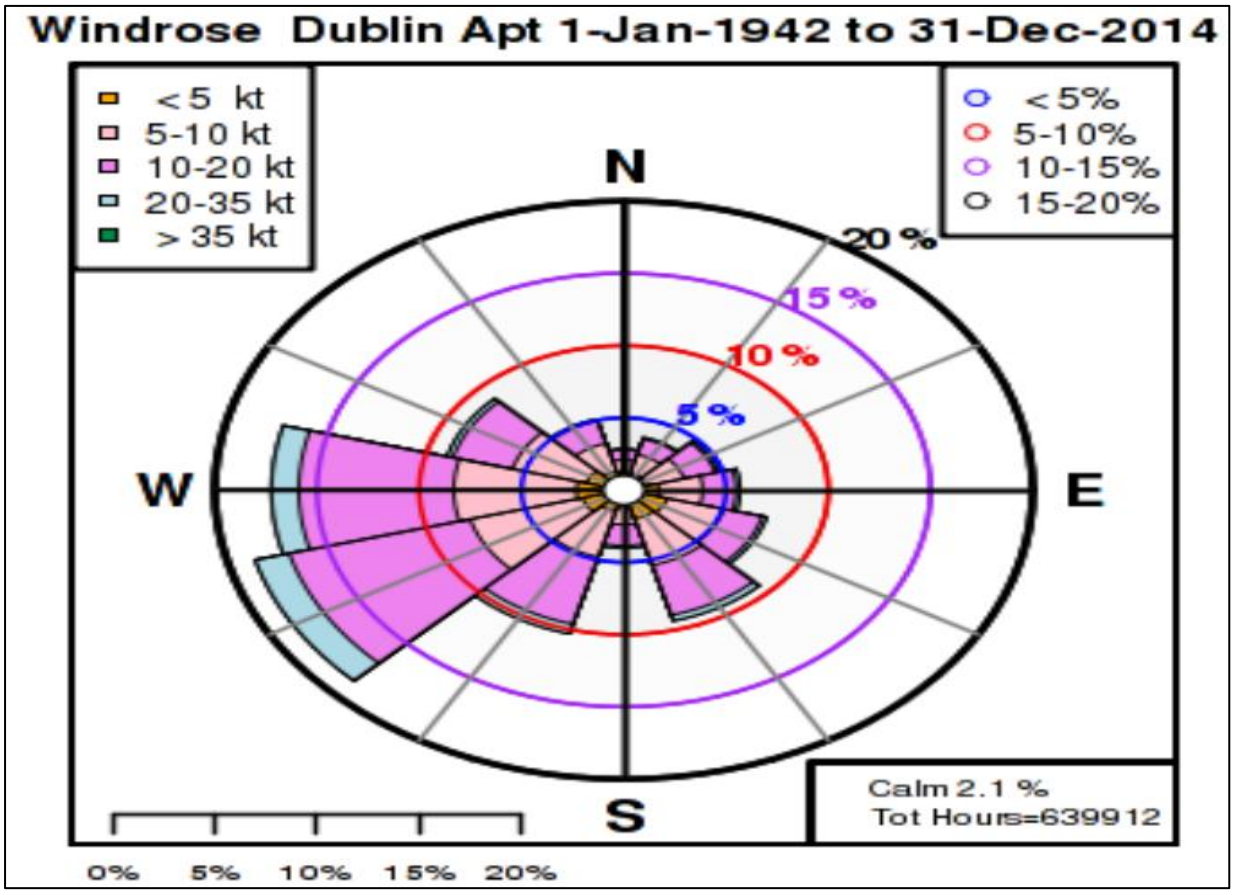

Figure 8-1: Dublin Airport Windrose (Source: Met Éireann)

8.3.2 Baseline Air Quality Data

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.

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. 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 site is located within Zone A. The long term data has been used to determine the background concentrations accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating, etc).

Long term monitoring results for Zone A, unless otherwise stated, for the following pollutants are shown in **Table 8-2**:

- Nitrogen Oxides (NOx);
- Nitrogen Dioxide (NO_2);
- Sulphur Dioxide (SO_2)
- Particulate Matter (PM_{10});
- Particulate Matter ($PM_{2.5}$); and
- Carbon Monoxide.

Table 8-2: Summary of the 2024 Air Quality Data obtained from Zone A Area

Pollutant	Regulation	Limit Type	Limit Value	EPA Monitoring Data
Nitrogen Dioxide (NO_2)	S.I. 180 of 2011	Hourly limit for protection of human health – not to be exceeded more than 18 times per year	200 µg/m^3	72.8 – 218.3 µg/m^3 (Hourly Max)
Nitrogen Dioxide (NO_2)	S.I. 180 of 2011	Annual limit for protection of human health	40 µg/m^3	9.5 – 38.2 µg/m^3 (Annual Average)
Nitrogen Oxides (NO + NO_2)	S.I. 180 of 2011	Critical limit for the protection of vegetation and natural ecosystems	30 µg/m^3	13.2 – 91.5 µg/m^3 (Annual Average)
Sulphur dioxide SO_2	S.I. 180 of 2011	Hourly limit for protection of human health -not to be exceeded more than 24 times per year	350 µg/m^3	19.7 – 76.9 µg/m^3 (Hourly Max)
		Daily limit of protection of human health – not to be exceeded more than three times per year	125 µg/m^3	6.4 – 30.1 µg/m^3 (Daily Max)
		Critical limit for the protection of vegetation and natural ecosystems (calendar year and winter)	20 µg/m^3	1.4 – 5.2 µg/m^3 (Annual Average)
Particulate matter (as PM_{10})	S.I. 180 of 2011	Annual limit for protection of human health	40 µg/m^3	9.5-16 µg/m^3 (Annual Average)
Particulate matter (as $PM_{2.5}$)	S.I. 180 of 2011	Annual limit for protection of human health	25 µg/m^3	6.2 – 8.1 µg/m^3 (Annual Average)
Carbon monoxide CO	S.I. 180 of 2011	8-hour limit (on a rolling basis) for protection of human health	10,000 µg/m^3	700 - 1200 µg/m^3 (Max Values)

There was some baseline exceedances of NOx limits in Zone A locations. For all other parameters, existing baseline levels were well below ambient air quality limit values in the vicinity of the proposed development.

8.3.3 Sensitivity of the Receiving Environment

In line with the IAQM guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*', 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 are taken into consideration. For the purposes of this assessment, high sensitive 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. Figure 8-2 shows the closest receptors to proposed development.

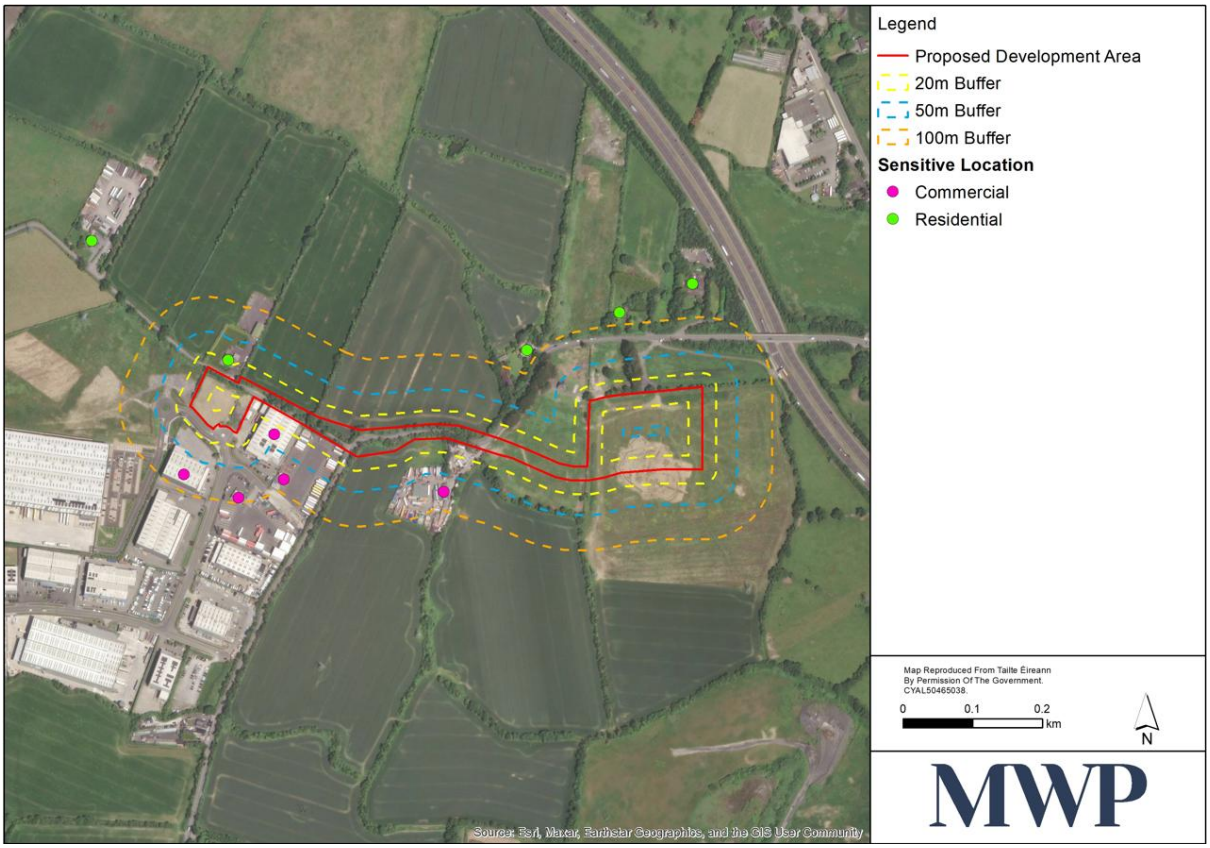

Figure 8-2: Dust Sensitive Receptors

In terms of receptor sensitivity to dust soiling, there are sensitive receptors in proximity to the proposed development, including currently occupied residential properties. There is one high sensitivity receptor within 20m of the entire site boundary. There is one medium sensitive receptor and one highly sensitive receptor within 50m of the entire boundary. There are six receptors within 100m of the entire site boundary. Based on the IAQM criteria outlined in Table 8-3, the worst-case sensitivity of the area to dust soiling is considered **medium**.

Table 8-3: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

Source: IAQM Guidance on the Assessment of Dust from Demolition and Construction (2024, V2.2)

In addition to sensitivity to dust soiling, the IAQM guidelines also outlines 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 classed 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 16 µg/m^3, refer to **Table 8-2** of **Section 8.3.2**. There is 1 No. high sensitivity receptor within 20m of the proposed development and 1 No. medium sensitivity receptor within 50m. Based on the IAQM criteria outlined in **Table 8-4**, the worst case sensitivity of the area to human health is considered **low**.

Table 8-4: Sensitivity of the Area to Human Health Impacts

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

Source: IAQM Guidance on the Assessment of Dust from Demolition and Construction (2024, V2.2)

The IAQM guidelines also outline the assessment criteria for determining sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50m from the boundary of a site, 50m of route used by construction vehicles and up to 250m from site entrance.

High sensitivity ecological receptors are sites with European or National designation with particularly dust sensitive species present. There are no Natura 2000 sites located within 50 to 250m of the proposed development and therefore the risk of dust emissions effecting ecological sites has been scoped out from further assessment.

8.4 Potential Effects of the Proposed Development

8.4.1 Construction Phase

Dust Emissions

In order to determine the level of dust mitigation required during the proposed works, 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 (see Section 8.3.3). The major dust generating activities are divided into four types within the IAQM guidance to reflect their differential impacts.

These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

Demolition

The proposed development does not require demolition therefore this has been scoped out from further assessment.

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- Large: Total site area > 10,000m^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 > 8m in height, total material moved >100,000 tonnes;
- Medium: Total site area 2,500m^2 – 10,000m^2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles at any one time, formation of bunds 4-8m in height, total material moved 20,000 – 100,000 tonnes; and
- Small: Total site area <2,500m^2, soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4m in height, total material moved <20,000 tonnes, earthworks during wetter months.

The total developable site within the proposed development is > 10,000m^2; therefore, the proposed earthworks can be classified as large. The sensitivity of the area, as determined in Section 8.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust effects in the absence of mitigation. Table 8-5 shows the risk of dust effects in terms of dust soiling, health impacts and ecology during the earthworks activities. This risk is as a result of the proposed earthworks activities in the absence of mitigation.

Table 8-5: Criteria for Rating Risk of Dust Impacts – Earthworks

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 8-6: Risk of Dust Impacts – Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Impacts
Dust Soiling	Medium	Large	Medium
Human Health	Low		Low

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large**: Total building volume > 100,000 m^3, on site concrete batching, sandblasting;
- **Medium**: Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small**: Total building volume < 25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

The proposed development is classified as having a **small** dust emission magnitude given that the total building volume is less than 25,000m^3. **Table 8-8** shows the risk of dust impacts in terms of dust soiling and health impacts during the construction works activities. This risk is as a result of the proposed construction works activities in the absence of mitigation.

Table 8-7: Criteria for Rating of Dust Impacts – Construction (IAQM, 2024)

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 8-8: Risk of Dust Impacts -Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Impacts
Dust Soiling	Medium	Medium	Low
Human Health	Low		Negligible

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emissions from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large**: > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100m;
- **Medium**: 10 – 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100m; and
- **Small**: <10 HGV (>3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50m.

The dust emission magnitude for the proposed trackout can be classified as **small** as there will be no more than 10 No. HGV outward movements per day.

Table 8-10 shows the risk of dust impacts in terms of dust soiling and health impacts during the trackout activities. This risk is as a result of the proposed trackout activities in the absence of mitigation.

Table 8-9: Criteria for Rating of Dust Impacts – Trackout

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 8-10: Risk of Dust Impacts – Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust Related Impacts
Dust Soiling	Medium	Small	Low
Human Health	Low		Negligible

Summary of Dust Emission Risk

The risk of dust impacts as a result of the proposed development are summarised in **Table 8-11** or each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring.

Overall, to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, a range of dust mitigation measures associated with medium to high risk of dust impacts must be implemented.

Table 8-11: Summary of Construction Phase Dust Impact Risk used to Define Site-specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	NA	Medium	Low	Low
Human Health	NA	Low	Negligible	Negligible

There is at most a medium risk of dust soiling effects during earthworks and low risk of human health effects. There is a low to negligible risk of dust soiling and human health effects during remaining construction activities. In the absence of mitigation, dust effects are to be predicted to be **negative, imperceptible to slight, temporary, local** and **direct**.

Construction Traffic Emissions

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, set out in **Section 8.2.1.3.**

On the basis that there is no requirement to carry out a detailed air quality assessment on traffic, it can be determined construction stage traffic will **likely** have a **neutral, imperceptible, temporary, local** and **direct** effect on air quality.

8.4.2 Operational Phase

Operational Traffic Emissions

During the operational phase, there will be maintenance vehicles occasionally visiting the site which can potentially result in emissions of NO_2, $PM_{2.5}$ and PM_{10}. As the frequency and number of maintenance vehicle visits will be occasional, there will no requirement for a detailed air quality assessment as TII criteria set out in **Section 8.2.1.4** will not be exceeded.

Therefore, it can be determined that operational stage traffic will **likely** have a **neutral, imperceptible, long-term, local** and **direct** effect on air quality.

Proposed Development Mechanical Operations

Once the proposed development is fully operational, there will be no emissions direct from the operating facility, when adequate maintenance is carried out.

As part of the initial commissioning of the gas pipeline, gas venting or purging will be required which will be carried out in line with IGE/SR/22. Methane will be the primary component of the released gas. There will be some venting for filter changeouts (every 3 months) and pigging operations (every 7-10 years) and other routine maintenance however these will not involve the release of significant quantities of methane to atmosphere. Due to the small amount of gas to be released and the once-off, short duration of the event, this is not predicted to have a significant effect on air quality.

During the operational phase, the system will be closed and there will be no emissions of gas to the ambient environment under typical operational conditions.

Provided adequate maintenance is carried out at Newtown AGI and BV extension areas, no significant sources of emissions are anticipated at these areas.

The AGI compound is a dead site (no onsite electrical equipment) with a below ground isolation valve in an access pit and an above ground isolation valve in an access pit and an above ground connection for a pig (Pipeline Inspection Gauges) launcher. Approximately every 7-10 years, the pipeline will be 'pigged' using an intelligent pig launched from the AGI in order to monitor the mechanical status of the pipeline itself.

The operational phase of the proposed development will therefore **likely** have a **neutral, imperceptible, local, temporary** and **direct** effect on air quality.

8.4.3 Do Nothing

In the Do Nothing scenario, ambient air quality will remain as per the baseline and will change in accordance with trends within the wider area. If the site remains undeveloped, it will continue to have no negative effect on existing ambient air quality. Emissions of pollutants from road traffic, including NO_2, PM_{10} and $PM_{2.5}$ will likely decrease in future years with the addition of further electric vehicles to the fleet and the phasing out of fossil fuel vehicles.

Any increase in traffic related emissions, without the subject development would be insignificant and would not result in a perceptible change in the existing local air quality environment.

8.5 Mitigation

8.5.1 Construction Phase

In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance. An Outline Construction Environmental Management Plan (OCEMP), refer to Appendix 2-1, has been prepared and incorporates all of the following mitigations. Prior to the construction phase, the Appointed Contractor(s) will prepare their own site-specific CEMP using this OCEMP as a framework.

The management of dust during construction will be reviewed during construction to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through best practice procedures. The following mitigation measures will be implemented on site:

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies. During the construction phase, all mitigation measures outlined in this chapter as well as in the dust environmental management plan, EMP 8, included in the OCEMP (refer to Appendix 2-1) will be implemented.

At the construction planning stage, the siting of activities and storage of materials will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. As the prevailing wind is predominately southerly, westerly and south easterly, locating materials downwind (to the northeast/northwest) of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.20 mm/day, dust generation is generally suppressed (UK Office of Deputy Prime Minister (2002), BRE (2003)). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10m/s (19.4 Knots) (at 7m above ground) to release loose material from storage materials and other exposed surfaces (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions is highest. The prevailing meteorological conditions in the vicinity of the site are favourable with regards to wind speed in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur.

The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

Site Roads and Routes:

Movement of transportation trucks and plant trucks along haul roads (in particular unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of supressing dust emissions from unpaved roads to apply speed restrictions.

- Bowsers or suitable watering equipment will be available during periods of dry weather through the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained periods to ensure that unpaved areas are kept moist. The required application rate frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface.

Site Traffic on Public Roads:

Spillage and blow off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed, covered or wetted at all times to restrict the escape of dust; and
- Public roads directly outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.
- On site road and compounds will be regularly cleaned and maintained as appropriate;
- Hard surface roads will be swept to remove mud and aggregate materials from their surface;
- Any un-surfaced roads shall be restricted to essential site traffic only;
- Furthermore, any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions;
- Vehicles using site roads shall have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road and on hard surfaced roads speed shall be restricted to 20km per hour;
- Public roads in the vicinity of the site will be regularly inspected for cleanliness, and cleaned as necessary
- Loads of materials leaving the site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation;
- Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind;
- Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods;
- At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the subject site boundary, movements of materials likely to raise dust will be curtailed

and satisfactory procedures implemented to rectify the problem before the resumption of construction operations;

- In relation to the completion of the proposed development, the hard standing surface, and all roads will be tarmacadamed/concreted where applicable. In periods of dry weather when dust emission would be greatest, a road sweeper, which would also dampen the road, will be employed as required to prevent the generation of dust; and
- In terms of good practice construction vehicles and equipment will receive regular maintenance. Technical inspection will be performed of vehicles to ensure they will perform most efficiently.

8.5.2 Operational Phase

Air quality effects during the operational phase are predicted to be imperceptible therefore no mitigation measures are required.

8.6 Monitoring

8.6.1 Construction Phase

The implementation of dust control methods will be monitored as follows, when required and during dust prevalent conditions.

- The developer must monitor performance to ensure that the proposed mitigation measures are implemented;
- The developer should identify appropriate locations for monthly monitoring during the construction phase. The Bergerhoff Gauge dust monitoring instrument is designed to measure for dust deposition, usually quoted as mg/m2/day.
- Total emissions arising from on-site operations shall not exceed 350 mg/m2/day averaged over a continuous period of 30 days when measured as deposition of insoluble and soluble particulate matter at any point along the perimeter of the boundary site.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- At all times, the dust mitigation procedures put in place will be strictly monitored and assessed.
    - The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practices and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

8.6.2 Operational Phase

The operational phase of the proposed development will have an imperceptible effect on air quality and therefore no monitoring is required.

8.7 Residual Impacts and Effects

There will be no significant residual effects from the construction phase or operational phase of the proposed development on air quality. Table 8-12 summarises the residual effects from the proposed development on air quality.

Table 8-12: Proposed Development Residual Effects on Air Quality

IMPACT	MITIGATION MEASURES	RESIDUAL EFFECT (POST-MITIGATION)					
		QUALITY OF EFFECT	SIGNIFICANCE	SPATIAL EXTENT	DURATION	OTHER RELEVANT CRITERIA	LIKELIHOOD
CONSTRUCTION							
Construction Effect 1: Dust Emissions on Sensitive Receptors	See Section 8.5.1	Negative	Imperceptible	Local	Temporary	Direct	Likely
Construction Effect 2: Traffic Emissions Effect on Air Quality	See Section 8.5.1	Neutral	Imperceptible	Local	Temporary	Direct	Likely
OPERATIONAL							
Operational Effect 1: Traffic Emissions Effect on Air Quality	N/A	Neutral	Imperceptible	Local	Long Term	Direct	Likely
Operational Effect 2: Mechanical Operations	N/A	Neutral	Imperceptible	Local	Temporary (Occurring once)	Direct	Likely

8.8 Cumulative Impacts and Effects

8.8.1 Construction Phase

The construction programme for the AGI, block valve (BV) and pipeline works will be determined by the client's phased delivery of works around the roadway network and power station site. The power station development is expected to be delivered over a 20-month period, comprising of six distinct phases.

Given the uncertainty associated with project sequencing, this EIAR assumes that all works, including the 220 kV Transmission Line connection, the proposed gas pipeline, the Kilshane Power Station, the 220 kV GIS Substation and AGI, will be constructed concurrently. Therefore, it was considered prudent to assess the cumulative construction stage impacts of all of these projects.

The environmental report associated with the 220kV GIS Substation and 220kV Transmission Line assessed the effects from dust emissions in accordance with IAQM guidance. The summary of dust impact risk associated with GIS substation and 220 kV transmission line construction works are shown in **Table 8-13**.

Table 8-13: Summary of Dust Impact Risk (GIS and 220 kV Transmission Line Environmental Report)

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	NA	High Risk	Medium Risk	Low Risk
Human Health	NA	Low Risk	Low Risk	Negligible

The GIS and 220 kV transmission line environmental report determined that effects from construction stage dust emissions will be **negative**, **short-term** and **imperceptible** in nature, posing no nuisance at nearby receptors, when dust mitigation measures are applied.

In terms of impacts to human health from dust emissions, with mitigation in place, the GIS and 220 kV transmission line environmental report predicted construction works to cause **neutral**, **short-term** and **imperceptible** effects.

The GIS and 220 kV transmission line environmental report determined that construction stage traffic emissions associated with the GIS and 220 kV transmission line were determined to have an **imperceptible**, **neutral** and **short-term** effect on air quality.

As part of the Kilshane Power Station EIAR, the effects of the construction phase on air quality was also assessed in accordance with IAQM guidance. The summary of dust impact risk for Kilshane Power Station works are summarised in **Table 8-14**.

Table 8-14: Summary of Dust Impact Risk (Kilshane Power Station EIAR)

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	NA	Medium Risk	Medium Risk	Medium Risk
Human Health	NA	Low Risk	Low Risk	Low Risk

The Kilshane Power Station EIAR concluded that, with mitigation in place, construction activities will result in a negative, short-term, and imperceptible impact on air quality. It also determined that dust-related human health effects during construction will be neutral, short-term, and imperceptible.

For the current proposed development, the dust assessment predicts a negative, imperceptible, local and temporary effect on sensitive receptors during the construction phase, with mitigation in place. The assessment of traffic-related emissions found the residual effects on air quality to be neutral, imperceptible, local and temporary.

Given that the predicted impacts from both the proposed development and the cumulative developments are imperceptible, no significant cumulative air quality effects are anticipated. Overall, the cumulative developments are expected to result in a neutral, imperceptible, local, and short-term effect on air quality with mitigation in place.

8.8.2 Operational Phase

The Kilshane Power Station and GIS substation will operate alongside the proposed development.

The Kilshane Power Station EIAR noted that the stack height of the gas fired power generation facility has been designed at an adequate height to aid dispersion of emissions and achieve compliance with the EU ambient air quality standards beyond the site boundary (including background concentrations). The EIAR also notes that there will be no additional traffic as a result of the development and therefore no significant impacts.

Kilshane Power Station EIAR determined that there would be a negative, long-term and imperceptible to slight residual effect on air quality during the operational phase, with mitigation in place.

The environmental report for the GIS substation and associated 220 kV transmission line determined that there would be no predicted impacts to air quality during the operational phase

The residual effect on air quality from traffic emissions, during the operational phase of the proposed development were assessed to be neutral, imperceptible, local , long term and direct, refer to Section 8.7.

The residual effect on air quality from the proposed development mechanical operations during the operational phase of this proposed development is likely to be neutral, imperceptible, local , temporary and direct, refer to Section 8.7.

Having considered the above cumulative projects in combination with the proposed development, the cumulative effects on air quality during the operational phase are predicted to be neutral, imperceptible to slight, local, and long term.

8.9 References

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