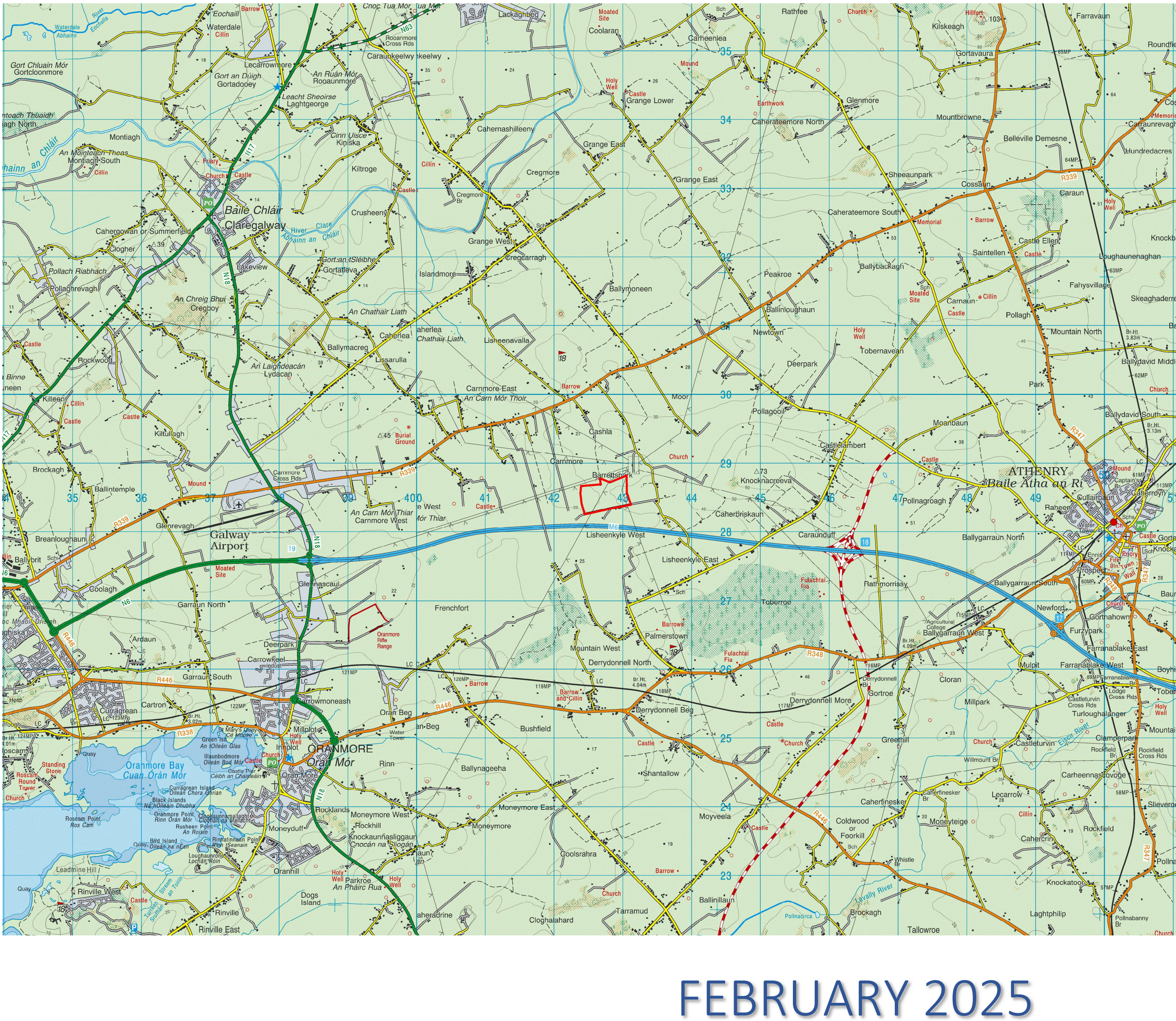
CHAPTER 10

AIR QUALITY



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QUARRY
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CHAPTER 10: AIR QUALITY

Introduction

10.1 This Chapter of the Environmental Impact Assessment Report (EIAR), prepared by Quarry Consulting addresses the potential air quality related impacts associated with the proposed continued operation and extension of an existing limestone quarry and continued use of an existing concrete manufacturing facility at Barrettspark, Athenry, Co. Galway.

10.2 The proposed development comprises the following:

- Continued use of the existing quarry to the permitted depth of minus 5 mOD, including drilling, blasting, crushing, processing, stockpiling of materials, associated roads and ancillary services (granted under Planning Ref. File No.: 09/1958 and ABP Ref.: PL07.235821);
- Continued use of open storage areas;
- Continued use of existing permitted concrete manufacturing facility (granted under Planning Ref. File No. 09230 and 19/517: ABP-304769-19);
- Continued use of the existing office (granted under Planning Ref. File No.: 09/1958 and ABP Ref.: PL07.235821);
- Continued use of the existing maintenance shed (granted under Planning Ref. File No. 09610);
- Continued use of the existing water management system (including settlement lagoons), weighbridge and wheelwash;
- Lateral extension of the existing permitted quarry area over a previously permitted extraction area (granted under Planning Ref. File No. 06/4125) of c.4.6 ha. area to a final floor level of minus 5 mOD. The total quarry extraction area will be c. 13 Ha.;
- Restoration of the application area to natural habitat after uses following completion of extraction.

10.3 The proposed development is within an overall application area of c. 27.5 hectares and is for a total period of 22 years (comprising an operational period of 20 years followed by 2 years for restoration).

10.4 Further information on the site infrastructure, operations, environmental management systems, and controls at the established quarry site is provided in the Chapter 3 of this EIAR.

Purpose of the Chapter

10.5 This chapter is aimed at assessing and documenting the potential impacts on air quality that could arise from the planned continued operation and extension of an existing limestone quarry and continuance of use of the existing concrete manufacturing facility. Within the context of a quarry operation, such impacts are related to processes like blasting, extraction, crushing, and transport of the quarried limestone.

10.6 The chapter is designed to present the current baseline conditions, identify potential air pollutant sources, estimate the likely magnitude and significance of these impacts, and propose suitable mitigation measures. A key objective is to ensure the proposed project adheres to all relevant air quality regulations and standards.

Scope of the Assessment

10.7 The primary focus of this air quality assessment is on the operational phase of the continuation of use and proposed extension to the existing limestone quarry. The aim is to identify, analyse,

and document potential effects to local air quality that could result from various quarry operations, including blasting, extraction, crushing, and transportation.

10.8 In addition to the application of Irish Guidelines as outlined in EPA (2006) and (2022), and in the absence of Irish Guidance specifically focussed on quarries and air quality, the work presented in this EIAR Section has also applied UK practical guidance as published by the **UK Institute of Air Quality Management Management - Guidance on the Assessment of Mineral Dust Impacts for Planning (May 2016).**

10.9 The later sections of this chapter will discuss:

- Screening
- Legislative Policy and Context.
- Methodology.
- Site Characteristics and The Proposed Development.
- Baseline Conditions.
- Impact Assessment.
- Mitigation Measures and Best Practices.
- Residual Impacts and Monitoring Program.

Contributors

10.10 Quarry Consulting undertook the impact assessment presented in this chapter on behalf of Coshla Quarries Ltd. This chapter was prepared by Rory Brickenden (B.A. MEngSc). The lead consultant for the study was Peter Kinghan (Chartered Mineral Surveyor), Post Graduate Diploma in Environmental Engineering.

Peter Kinghan

10.11 The Air Quality chapter of the Environmental Impact Assessment Report (EIAR) for the proposed quarry expansion has been authored by Peter Kinghan, a Chartered Mineral Surveyor and Chartered Geomatics Surveyor with over 20 years of professional experience in environmental impact assessments across diverse sectors, including extractive industries, waste management, and energy. He holds a Diploma in Geo Surveying, a Degree in Mineral Surveying and Resource Management, and a Diploma in Environmental Engineering from Trinity College Dublin (2006), complemented by a Master's degree in Business Management. Additionally, Peter is certified in Geographic Information Systems (DIT 2008) and holds a certificate in Environmental Sustainability from University College Dublin (2024).

Rory Brickenden BA, MEngSc.

10.12 The Air Quality chapter of the Environmental Impact Assessment Report (EIAR) for the proposed quarry expansion has been completed by Rory, a geoscientist with Quarry Consulting. Rory holds a BA in Geoscience from Trinity College Dublin (2023) and a Master's degree in Water, Waste, and Environmental Engineering from University College Dublin (2024). His professional experience encompasses a variety of environmental assessments, particularly in the quarry and energy sectors. Rory's experience in environmental surveying air quality monitoring tasks such as noise, dust, and water monitoring.

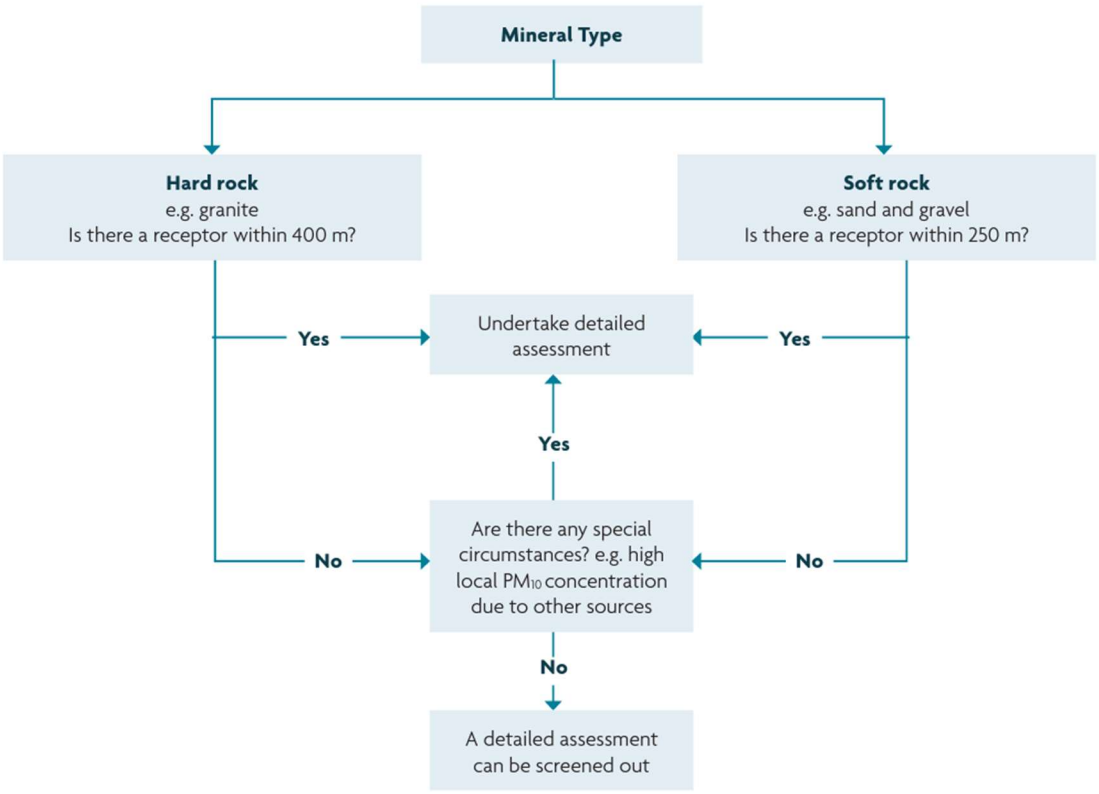
Screening of Detailed Assessment

10.13 As per the 'Guidance on the Assessment of Mineral Dust Impacts for Planning' there is the potential to screen the need for a detailed assessment. Section 3 of the report states:

"Where there are no receptors near to a mineral site there will be no significant effect. Therefore it is possible to screen out the need for a detailed assessment based on the distance from a mineral site to potentially sensitive receptors."

10.14 The flow chart (figure 10.1) provides the steps undertaken in the screening of the assessment.

Figure 10.1: Screening of Detailed Assessment



10.15 The proposed development involves the extraction of limestone and manufacture of concrete, and there are receptors identified within 400 metres from the proposed development application boundary.

10.16 A detailed assessment must be carried out to assess the impacts arising from dust due to the proposed development. This assessment will take into account existing and proposed operations. It also considers the potential impact on health and the potential effect on flora and fauna including any designated sites that may be affected.

Legislative Context and Policy

Air Quality Standards

10.17 The Clean Air for Europe (CAFE) Directive (2008/50/EC) was published in May 2008, replacing earlier directives. This Directive was transposed into Irish legislation by the Air Quality Standards (AQS) Regulations 2011 (S.I. No. 180 of 2011), which established the national policy on air quality. These regulations were the primary basis for assessing and managing air quality in Ireland until recently (source: epa.ie)[1].

10.18 The Directive (EU) 2024/2881 on Ambient Air Quality and Cleaner Air for Europe (recast) was adopted by the European Parliament and the Council on the 23rd of October 2024. This directive was published in the Official Journal of the European Union on 20th of November 2024, entering into force on the 10th of December 2024, 20 days after publication.

10.19 The Directive (EU) 2024/2881 builds on the CAFE Directive, setting new and more stringent air quality standards under the EU's Zero Pollution Action Plan as part of the European Green Deal. The directive introduces phased limit values to be attained by 2026 and 2030, reflecting the EU's commitment to reducing the health and environmental impacts of air pollution.

10.20 The Directive (EU) 2024/2881 aims to:

a) Reduce the health and environmental impacts of air pollution by establishing stricter limit values, target values, and average exposure reduction obligations for key pollutants;

b) Ensure a transition towards a toxic-free environment by 2050, with staged air quality standards for 2026, 2030, and beyond;

c) Improve air quality monitoring, modelling, and public reporting mechanisms;

d) Facilitate coordinated efforts across Member States to manage transboundary air pollution.

10.21 The directive introduces specific air quality standards for pollutants such as:

- nitrogen oxides;
- sulphur dioxide;
- carbon monoxide;
- ozone;
- particulate matter (PM10 and PM2.5);
- benzene;
- lead; and
- heavy metals.

10.22 The World Health Organization (WHO) Air Quality Guidelines (2021) set stringent limits for key air pollutants to protect public health. These guidelines recommend lower thresholds than current EU standards for pollutants such as $PM_{2.5}$, PM_{10}, NO_2, and SO_2, reflecting the latest scientific evidence on the health impacts of air pollution. While these guidelines are not legally

[1] https://airquality.ie/information/air-quality-standards

binding, they serve as a benchmark for policymakers aiming to reduce air pollution and its associated health risks.

10.23 Table 10.1 outlines the air quality limit values for the protection of human health, highlighting thresholds for key pollutants as established under the CAFE Directive (2008/50/EC), the Directive (EU) 2024/2881, and the latest WHO Air Quality Guidelines (2021). Table 10.2 presents air quality limit values for the protection of vegetation and ecosystems.

Table 10.1 Air quality limit values for human health

Human Health	Air Quality Emission Limit Values (µg/m³)				
Pollutant	Averaging Period	CAFE Directive (2008/50/EC)	Directive (EU) 2024/2881 (Limits to be attained by **2026**)	Directive (EU) 2024/2881 (Limits to be attained by **2030**)	WHO Air Quality Guidelines
Nitrogen Dioxide (NO_2)	Hour	200µg/m³ (not to be exceeded more than 18 times in a calendar year)	200 µg/m³ (not to be exceeded more than 18 times in a calendar year)	200µg/m³ (not to be exceeded more than 3 times in a calendar year)	200µg/m³
	24 hours	N/a	N/a	50 µg/m³ (not to be exceeded more than 18 times in a calendar year)	25µg/m³ (3-4 exceedance days per calendar year)
	Calendar Year	40 µg/m³	40 µg/m³	20 µg/m³	10µg/m³
Sulphur Dioxide (SO_2)	10 minutes	N/a	N/a	N/a	500 µg/m³
	Hour	350µg/m³ (not to be exceeded more than 24 times in a calendar year)	350µg/m³ (not to be exceeded more than 24 times in a calendar year)	350µg/m³ (not to be exceeded more than 3 times in a calendar year)	N/a
	24 hours	125µg/m³ (not to be exceeded more than 3 times in a calendar year)	125µg/m³ (not to be exceeded more than 3 times in a calendar year)	50µg/m³ (not to be exceeded more than 18 times in a calendar year)	40 µg/m³ (3-4 exceedance days per calendar year)
	Calendar Year	N/a	N/a	20 µg/m³	N/a

Particulate matter with aerodynamic diameter of less than 10µm (PM_{10})	24 hours	50 µg/m^3 (not to be exceeded more than 35 times in a calendar year)	50 µg/m^3 (not to be exceeded more than 35 times in a calendar year)	45 µg/m^3 (not to be exceeded more than 18 times in a calendar year)	45 µg/m^3 (3-4 exceedance days per calendar year)
	Calendar Year	40 µg/m^3	40 µg/m^3	20 µg/m^3	15 µg/m^3
Particulate matter with aerodynamic diameter of less than 2.5µm ($PM_{2.5}$)	24 hours	N/a	N/a	25 µg/m^3 (not to be exceeded more than 18 times in a calendar year)	15 µg/m^3 (3-4 exceedances per calendar year)
	Calendar Year	25 µg/m^3 (stage 1 $PM_{2.5}$) 20 µg/m^3 (stage 2 $PM_{2.5}$)	25 µg/m^3	10 µg/m^3	5 µg/m^3
Lead	Calendar Year	0.5 µg/m^3	0.5 µg/m^3	0.5 µg/m^3	0.5 µg/m^3
Carbon Monoxide	1 hour	N/a	N/a	N/a	30,000 µg/m^3
	8 hours	10,000 µg/m^3	10,000 µg/m^3	10,000 µg/m^3	10,000 µg/m^3
	24 hours	N/a	N/a	4,000 µg/m^3 (not to be exceeded more than 18 times in a calendar year)	4,000 µg/m^3 (3-4 exceedance days per calendar year)
Benzene	Calendar Year	5 µg/m^3	5 µg/m^3	3.4 µg/m^3	1.7 µg/m^3

Ozone	Maximum daily 8 hour mean	120 µg/m^3 (not to be exceeded more than 25 days per calendar year averaged over 3 years)	120 µg/m^3 (not to be exceeded more than 18 days per calendar year averaged over 3 years)	120 µg/m^3 (not to be exceeded more than 18 days per calendar year averaged over 3 years)	100 µg/m^3 (3-4 exceedances per calendar year)

Table 10.2 Air quality limit values for vegetation and ecosystems

Vegetation		Air Quality Emission Limit Values (µg/m^3)	
Pollutant	Averaging Period	CAFE Directive (2008/50/EC)	Directive (EU) 2024/2881
Nitrogen dioxide (NOx)	Calendar year	30µg/m^3	30µg/m^3
Sulphur Dioxide (SO_2)	Calendar year	20 µg/m^3	
	1st October - 31st March) (Winter mean)	20 µg/m^3	20 µg/m^3

Air Quality Monitoring and Compliance in Ireland

10.24 Ireland's air quality monitoring network has expanded significantly in recent years. As of November 2024, the network consists of 112 operational stations, providing coverage across the country. This network plays a crucial role in generating public health advice, assessing compliance with EU air quality standards, and supporting policy decisions. The EPA, in collaboration with local authorities, public bodies, and universities, manages the monitoring network to ensure that data is robust and reliable. Real-time air quality data, accessible through the *airquality.ie*[2] platform, supports public awareness, national and international reporting, and public health actions.

10.25 In 2022, Ireland successfully met all its legal requirements under the Cleaner Air for Europe (CAFE) Directive[3]. None of the monitored pollutants, including PM_{10}, $PM_{2.5}$, NO_2, and SO_2, exceeded the EU limit values. However, challenges remain, particularly regarding $PM_{2.5}$ from solid fuel combustion and NO_2 from vehicle emissions in urban areas. These local challenges highlight the importance of continued investment in cleaner technologies and public awareness initiatives.

10.26 The adoption of Directive (EU) 2024/2881 introduces stricter limits to be phased in by 2026 and 2030, reflecting the EU's commitment to reducing air pollution and protecting public health. These enhanced standards will present additional challenges, particularly in heavily urbanised or traffic-congested areas, requiring further innovation and coordinated policy efforts to maintain compliance.

Relevant Guidance

10.27 This assessment has been undertaken with guidance from the 'Guidelines on the information to be contained in environmental impact assessment reports', published by the EPA in May 2022 and 'Environmental Impact Assessment of projects, guidance on the preparation of the Environmental Impact Assessment Report' published by the European Commission in 2017.

10.28 Other guidance documents considered in this assessment include:

- IAQM (UK); Guidance on the Assessment of Mineral Dust Impacts for Planning, 2016;
- EPA; Guideline Document entitled Environmental Management in the Extractive Industries, 2006;
- Galway County Development Plan 2022-2028;
- Climate Action Plan, 2024;
- Quarries and Ancillary Activities – Guidelines for Planning Authorities – DOEHLG, April 2004;
- Environmental Management in the Extractive Industry, EPA 2006.

Planning Policy

10.29 Currently, the National Planning Policy lacks dedicated regulations addressing air emissions within the realm of the extractive industry or its associated production activities. The responsibility of evaluating land use and planning matters linked to the extractive industry and related undertakings falls upon Local Authorities when formulating their County Development Plans. The overarching goal of planning policy is to establish a sustainable management approach

[2] https://airquality.ie/

[3] https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2022.php#:~:text=Summary%3A%20Air%20quality%20in%20Ireland,based%20WHO%20guidelines%20in%202022.

for activities and outcomes, achieving a well-balanced equilibrium among environmental, economic, and social factors.

Galway County Development Plan 2022-2028

10.30 The current Galway County Development Plan which was adopted in May 2022 includes a number policies and objectives for the planning and sustainable development of the County from 2022-2028. The following policies relate to air quality:

AQ 1 Ambient Air Quality

To promote the preservation of best ambient air quality compatible with sustainable development in accordance with the EU Ambient Air Quality and Cleaner Air for Europe (CAFÉ) Directive (2008/50/EC) and ensure that all air emissions associated with new developments are within Environmental Quality Standards as set out in the Air Quality Standards Regulations 2011 (SI No. 180 of 2011) (or any updated/superseding documents).

AQ 2 Assessment of Air Quality

To require developments which would have the potential to have adverse impacts on air quality to carry out assessments of the impact of the development on air quality.

AQ 3 Air Quality Mitigation Measures

To require the use of appropriate mitigation measures such as dust dampeners to minimise the potential impacts of developments on air quality.

Existing Conditions – Galway County Council Plan File Ref. No. 09/1958 & ABP Ref: PL 07.235821

10.31 The existing planning conditions for the existing quarry relating to air quality are shown below:

Condition No.13:

'Dust levels at the site boundary shall not exceed 350 milligrams per square metre per day averaged over a continuous period of 30 days (Bergerhoff Gauge). Details of a monitoring programme for dust shall be submitted to and agreed in writing with the planning authority within three months of the date of this order. Details to be submitted shall include monitoring locations, commencement date and the frequency of monitoring results, and details of all dust suppression measures.

A monthly survey and monitoring programme of dust and particulate emissions shall be undertaken to provide for compliance with these limits. Details of this programme, including the location of dust monitoring stations, and details of dust suppression measures to be carried out within the entire quarry complex, shall be submitted to and agreed in writing with the planning authority within three1 months of the date of this order.'

Condition No.21:

'A wheelwash facility incorporating underbody power washing shall be used by all vehicles exiting the site.'

Guidelines Extractive Industry Emissions Limit Values

10.32 In 1996, the Irish Concrete Federation (ICF), the trade body representing the interests of quarry operators and producers of construction materials, published the ICF Environmental Code which provided guidance for its members on best practice in the environmental management of quarries. The document was subsequently updated in 2005.

10.33 Section 261 of the Planning and Development Act 2000 (as amended), which regulates a significant proportion of established pit development, came into effect in April 2004. The Department of Environment planning guidelines for the extractive industry 'Quarries and Ancillary Activities – Guidelines for Planning Authorities' (DoEHLG 2004) were published around the same time.

10.34 Separately, in 2006, the EPA published its Environmental Management Guidelines for Environmental Management in the Extractive Industry (Non-Scheduled Minerals).

10.35 There are several methods to measure dust deposition but only the German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – the Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance.

10.36 On this basis, the EPA recommend a dust deposition limit value of 350 mg/m2/day (when averaged over a 30-day period) be adopted at Site boundaries associated with quarrying related activities.

Methodology

Selection of Athenry Weather Station

10.37 The closest weather stations with enough appropriate records to best represent long term conditions at the subject site is the Athenry weather station. Athenry has been adopted for being the closest weather station illustrating monthly rainfall. The weather station is located such that the meteorological data collected closely represented the conditions experienced at the proposed development.

Dust Dispersal

10.38 In practice, the number of days when dust may be transported beyond the existing quarry boundary and the proposed extension area is quite limited. The reasons are being that heavier rainfall has the potential to provide natural suppression over longer periods than one day. Also, a combination of dry weather and wind is required to raise and transport airborne dust. Most windy days occur in the winter when weather conditions tend to be wetter.

10.39 As part of the assessment, the distances to nearby receptors will be taken from the site boundary and not the location of the individual site activity. This is a conservative approach in conducting the assessment.

Windspeed Direction and Frequency

10.40 The amount of dust capable of being dispersed to a particular location together with its frequency, is related to several factors including distance, weather and topography.

Distance

10.41 As dust travels downwind from the source it disperses outwards and upwards and progressively falls to the ground surface, with larger particles falling first. As a result, the concentration of dust reduces rapidly from the source of the emission. Most emitted dust is deposited generally, within a distance of a few tens of metres. Smaller particles have the potential to travel further but with minimal significance due to dispersion such that any cumulative concentration would fall well below Air Quality Objectives.

Topography

10.42 Topography is also a significant factor with respect to dust dispersal. There is a substantial change in level between the sources of dust within the current quarry excavation and processing

areas and sensitive receptors. These processing areas will to a large extent be the same as they are at the present time.

10.43 Receptors are mainly at a significantly higher elevation from the principal sources of dust. The local terrain between the main source and the receptor acts as a physical barrier. This effectively provides a natural shelter for nearby receptors and reduces significantly any airborne concentrations.

Weather

10.44 The main elements of weather play an important part in the dispersion of dust particles. These are wind and rainfall. The direction in which airborne dust will travel, and be deposited, is determined by the direction from which the wind travels. The wind speed and gusts will dictate how far dust may travel.

10.45 Rainfall is an important factor in dust dispersal as it acts as a natural dust suppressant. Ireland has a maritime climate which results in high levels of rainfall. The weather tends to be mild, moist and changeable with abundant rainfall and in general a lack of temperature extremes. This has a significant effect on dust emissions.

10.46 Relatively small amounts of daily rainfall, c. >0 2mm are sufficient to ensure that dust is not readily dispersed away from its source.

10.47 Research carried out in the Netherlands with a climate broadly similar to Ireland concluded that it took a period of 28 hours following rainfall events for particulate matter (PM) in the form of road dust to reach 50%, of its maximum mobility. It took 90 hours to reach 90% mobility of its maximum mobility (Source-Effect of rain events on the mobility of road dust load in two Dutch and Spanish roads).[4]

10.48 The data from the Athenry weather station shows monthly precipitation from 2021 – 2024 (see table 10.3)

Table 10.3 Total monthly rainfall in millimetres for Athenry weather station

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2024	92.4	159.1	130.5	100.7	59	58.9	71.5	159	46.6	112.7	88	82.2	1160.6
2023	113.9	42	185.9	93.4	63.5	93.8	224.1	129.1	148.2	179.9	113.5	202.9	1590.2
2022	56.9	143.1	39	51.6	78.9	79.4	66	79.6	114.2	199.3	156.2	114.3	1178.5
2021	167.3	113.4	102.1	23.9	95.7	29.8	58.5	84.8	91.1	164	78.9	114.7	1124.2

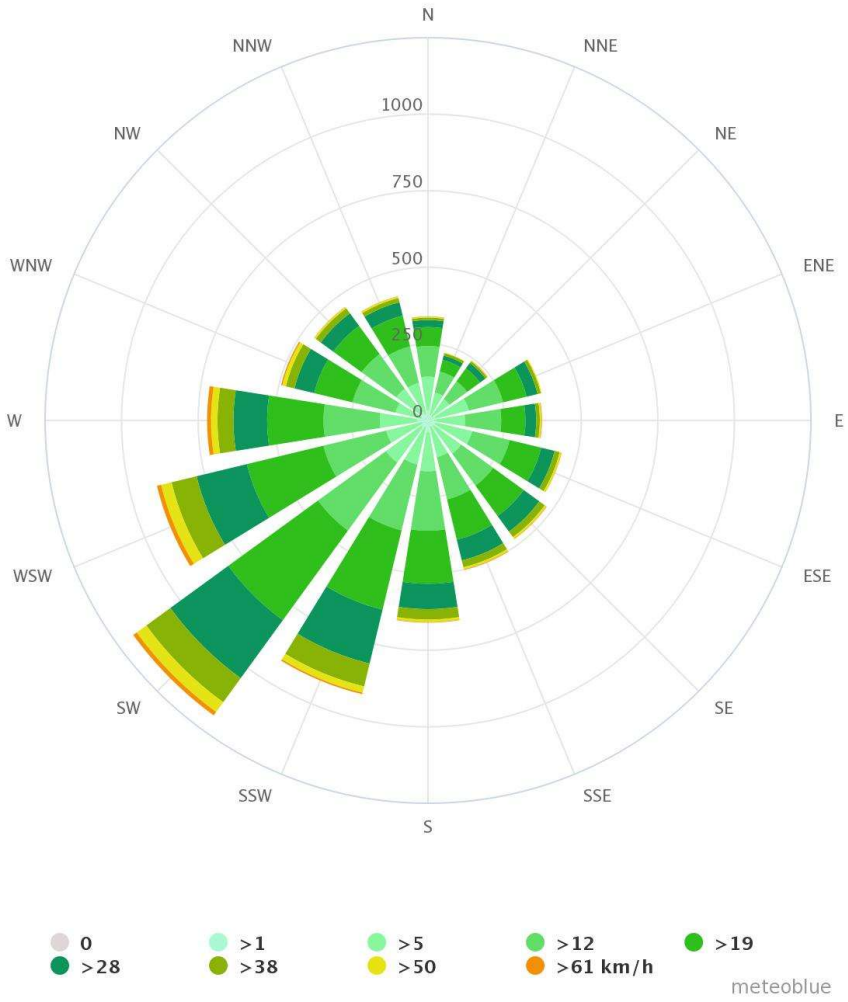
10.49 With respect to wind, data from Athenry weather station was used to obtain a Windrose that shows the frequency of winds greater than 2.5m/s and rainfall less than 0.2mm. These are classed as potentially dusty wind under IAQM guidance. Met Eireann historical data (https://www.met.ie/climate/available-data/historical-data) was used to obtain hourly data on precipitation amount, mean wind speed and predominant wind direction from February 2010 to August 2024.

[4] https://www.sciencedirect.com/science/article/pii/S135223101200814X

10.50 The frequency of exposure of each receptor is based upon the frequency of winds capable of carrying dust particles blowing in the direction, from the source to the receptor, on days when rainfall does not inhibit dust from becoming airborne.

10.51 A wind-rose for the site is presented in Figure 10.2 from Meteoblue.com for Athenry, Galway and illustrates the predominant wind directions from the south-west. The potential for the generation of airborne dust will increase with wind speed, with winds greater than 2.5 m/s capable of carrying airborne dust.

Figure 10.2: Windrose for Athenry, Co. Galway (Meteoblue.com)



10.52 A detailed methodology is provided in Appendix A - Methodology. Figure 10.A1 in Appendix 1 shows a Windrose showing the frequency of potentially dusty winds.

Dispersion Modelling

IAQM

10.53 The Institute of Air Quality Management (IAQM), in its 2016 guidance on the Assessment of Mineral Dust Impacts for Planning, notes that detailed dispersion modelling is not generally recommended for mineral extraction sites due to the lack of reliable sector-specific emission

factors. Instead, the IAQM promotes a qualitative, risk-based approach using the Source-Pathway-Receptor (S-P-R) framework, which is more suited to dust assessments in this sector.

Conclusion

10.54 The IAQM guidance discourages detailed modelling for mineral extraction sites, therefore dispersion modelling is not deemed necessary. The existing dust monitoring program, combined with the continued enforcement of mitigation measures, provides a sufficient basis for managing dust emissions effectively. Therefore, a qualitative risk-based approach will adequately address the air quality impacts of the current quarry operations.

10.55 This approach ensures ongoing compliance with environmental standards while accounting for the practical limitations of dispersion modelling in the context of mineral extraction.

PM10 Contribution from Extraction Activities

10.56 The IAQM recommend that if the PM10 background concentration is less than 17 µg/m3 there is little risk that the process contribution (PC) from the site would lead to an exceedance of the annual mean objective.

10.57 In terms of whether the PM10 concentration in the local area is likely to exceed the AQS, the following information has been reviewed:

- existing PM10 concentrations; and
- expected additional contribution of PM10 from site operations.

10.58 In terms of estimating the potential magnitude of impact from site operations, a UK edition of the LAQM Technical Guidance (LAQM.TG(03)) stated that fugitive dust from stockpiles, pit operations can potentially contribute up to 5µg/m3 towards annual mean background concentrations of the coarse fraction (2.5 – 10µm diameters) of particulates in the immediate area.

10.59 Given the nature and scale of existing activities, the potential PM10 impact of increased intake is considered to be lower than this. However, to ensure a robust assessment of potential PM10 impacts, 5µg/m3 has been applied to represent the development contribution to annual ambient PM10 concentrations. This value has then been added to existing background levels to assess whether the Air Quality Standards objective is likely to be exceeded.

Traffic Emissions

10.60 The Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document (Publication number: PE-ENV-01106) published by Transport Infrastructure Ireland (TII) in December 2022 outlines the methodology for assessing air quality impacts associated with infrastructure projects. This document includes detailed guidance on screening criteria to determine if traffic changes due to a proposed scheme may affect air quality. The criteria for defining the affected road network (ARN) are as follows:

- Road alignment will change by 5 meters (m) or more; or
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more; or
- Peak hour speed will change by 20 kph or more

Existing Environment

Site Location

10.61 The site is located in the townland of Barretspark, situated approximately 13km east of Galway City centre and approximately 7km west of Athenry town centre.

10.62 The site is located approximately 155m to the north of the M6 – Galway – Dublin Motorway. Access to the site is provided via a 1km private access track that enters the site along its northern boundary. The access track joins the L7109, which in turn joins the R339 at a t-junction approximately 1.3km north of the site. In the vicinity of the site the L7019 comprises a marked single carriage road with an 80km/hr speed limit.

10.63 The application site is comprised of an existing operational quarry, which is broadly rectangular in shape within an overall site area of c.27.5ha. The site is situated between the 20m and 30m contour lines, with higher ground immediately west of the application site, at Droingin Lair (53m above Ordnance Datum (OD)) and to the north-east at Drumsheel Lower (52m above OD).

10.64 Beyond the site, the landscape is rural or industrial in character. Agricultural uses consist of fields used for pasture enclosed with stone walls or post and wire fencing. Industrial uses include the existing ESB substation immediately north-east of the site and a metal-work company, further to the north-east. Tree cover is limited to some field boundaries and occasional conifer plantations, including at Palmerstown approximately 1.6km to the south-east of the site.

10.65 Residences within the general area typically consist of one-off rural houses and ribbon development along the local road network. The nearest properties to the site comprise one dwelling (uninhabited) situated approximately 20m to the south of the site boundary and several dwellings located along the L7109, the closest of which is 368m to the application boundary.

Proposed Development

10.66 The proposed development comprises the continued operation of the existing quarry, including the continuation of the concrete manufacturing facility and all existing associated uses and activities. The proposed development also includes a lateral extension to the east and southwest of the existing quarry over a previously permitted extraction area (granted under Planning Ref. File No. 06/4125) of c.4.6 ha. area to a final floor level of minus 5 mOD. The total quarry extraction area will be c. 13 Ha.

10.67 The existing access routes and haul routes will continue to be used as part of the proposed development.

Predicted Impacts on Air Quality

10.68 Day to day activities associated with quarrying activity can have the potential to give rise to elevated dust levels if activities associated with extraction and transportation of material are not managed correctly. As dust travels downwind from the source it disperses outwards and upwards and progressively falls to the ground surface, with larger particles settling first.

10.69 The primary sources of air emissions from the development will be related to plant and machinery operating across various activities, including, extraction, materials handling, and both on-site and off-site transportation of materials. Wind-blown dust can also arise under dry and windy conditions. Due to the high level of precipitation in the study area, dust generation is naturally suppressed. Potential impacts from these activities are primarily related to dust deposition and vehicle and plant emissions.

Drilling and Blasting of In-situ Material

10.70 In order to remove the underlying bedrock, blast holes must be first drilled using a blasting rig. This will be undertaken approximately once in a 5 week period, potentially increasing to two times during periods of high demand. Drilling rigs used are fitted with a dust and noise suppression system. Emission from drilling and blasting are generally relatively low and do not travel far from the source.

Transportation of Material

10.71 Emissions from vehicles travelling from the application area to the existing quarry can act as a source of emissions and can occur along the entire route. Vehicle movements on the internal access/haul roads are a source of dust nuisance as emissions can increase rapidly in proportion to vehicle speed and traffic volume. Research has shown that the majority of dust particles, typically produced from un-surfaced roads, deposit rapidly settles within 8m of the source.

Vehicle & Plant Emissions

10.72 Exhaust emissions resulting from plant and vehicles operating directly at the application area or indirectly by transporting material from the application area to the main quarry have the potential to contribute to local pollution levels, both within and surrounding the area. Carbon Dioxide (CO_2), Nitrous Oxide (N_2O) constitutes the main emissions from the plant and vehicles operating at the application area.

Receptors

10.73 The local environment surrounding the application area comprises a range of ecological and human receptors that may be potentially impacted by changes to air quality. A description of the sensitive receptors located within 400m of the proposed development is shown below:

Human Receptors

10.74 Potential impacts on human receptors in proximity to the quarry site are assessed in this section.

10.75 It has been found that deposited dust does not generally travel beyond 400 m (IAQM, Appendix 2, 2016), therefore all receptors within 400 m of the site boundary are included in the assessment. The guidance states that it is commonly accepted that the greatest impacts from particulates will occur within 100 m of the source, with the potential for travel up to 400 m.

10.76 Within a 400-meter radius of the existing limestone quarry, there are approximately 2 residences.

10.77 Table 10.4 shows the classification based on the direction and frequency of potentially dusty winds in relation to each of the receptors.

Table 10.4 Receptor classification based on wind frequency

Receptor	Relevant Wind Direction (Based on Windrose)	Frequency of Potentially Dusty Winds	Frequency Classification
R1	330 - 10	5.58	Moderately Frequent
R2	140-170	11.49	Moderately Frequent
R3 – Cashla ESB Substartion	210-250	16.01	Frequent
R4 – C&F Tooling	210-250	16.01	Frequent

10.78 Table 10.5 and Figure 10.3 show the receptors within 400m of the proposed development which will be assessed. Receptor R1 is an unoccupied dwelling, receptor R2 is a residential dwelling and receptors R3 and R4 consist of the Coshla substation and C&F Tooling.

Table 10.5 Categorisation of receptor distance

Receptor	Sensitivity	Distance (m) / Direction From Application Boundary (approx.)	Distance Category
R1	High	20m South	Close
R2	High	368m East	Distant
R3 – Cashla ESB Substation	Medium	31m Northeast	Close
R4 – C&F Tooling	Medium	362m Northeast	Distant

10.79 The frequency of potentially dusty winds and the distance from the application boundary is used to determine the pathway effectiveness.

Figure 10.3: Receptor distance to application boundary

Environmental Receptors

10.80 The Galway Bay Complex SAC/SPA, Lough Corrib SAC, Cregganna Marsh NHA/SPA, Rahasane Turlough SAC/SPA are located within 10k of the of the application area (table 10.6). The sites are a valuable ecological resource. The effects of air quality changes on each of the designated sites are extremely unlikely due to the distance, therefore they are not included in the assessment.

Table 10.6 Distance of nearest ecological receptor

Receptor	SENSITIVITY	DISTANCE (M) / DIRECTION FROM APPLICATION BOUNDARY (APPROX.)
Galway Bay Complex SAC/SPA	High	3.88km Southwest
Lough Corrib SAC	High	3.93km Northwest
Inner Galway Bay SPA	High	5.7 Southwest
Cregganna Marsh NHA/SPA	High	6.17km Southwest
Rahasane Turlough SAC/SPA	High	9.39km southeast

Receptor Sensitivity

10.81 There are four receptors being assessed, two are residential and one is the ESB substation and C&F Tooling metalworks facility. The residential receptors are classified as highly sensitive receptors as seen in The Institute of Air Quality Management: Guidance on the Assessment of Mineral Dust Impacts for Planning (2016):

> 'High Sensitivity Receptor:
>
> - users can reasonably expect enjoyment of a high level of amenity; or
> - the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.
> - indicative examples include dwellings, medium and long term car parks and car showrooms.'

Dust Dispersion and Ecological Sensitivity

10.82 Research and operational guidelines indicate that significant ecological impacts due to dust deposition typically occur only at very high deposition rates, which are generally over 1 gram per square meter per day (1 g/m²/day).

10.83 This deposition rate significantly exceeds the upper limit recommended by environmental guidelines. The Department of Environment, Heritage and Local Government (DEHLG), along with the Environmental Protection Agency (EPA)[5], has set the threshold for acceptable dust deposition rates for industrial sectors including extractive industries. According to the guidelines provided by the DEHLG and the EPA, the threshold is set at 350 milligrams per square meter per day (350 mg/m²/day). This limit is established to prevent any significant adverse ecological or human health impacts under typical operating conditions.

Baseline Conditions

Existing PM_{10} Concentrations

10.84 The proposed development is located in Air Quality Zone D – Rural Ireland. In the absence of local background data, the most recent annual mean PM_{10}, $PM_{2.5}$, and NO_2 monitoring data from other stations within the EPA National Ambient Air Quality Monitoring Network located in Zone D areas across Ireland are shown in table 10.7. All monitored concentrations in 2023 are below the relevant standards forPM_{10}, $PM_{2.5}$ and NO_2 given in Table 10.7.

Table 10.7 Annual mean monitoring data for zone D stations (Air Quality Summary Tables 2023)

Monitoring Station (Air Quality Zone D)	Annual Mean Concentration (µg/m3)			PM_{10}: Number of Days >50µg/m3	NO_2: Number of Days >200µg/m3
	PM_{10}	$PM_{2.5}$	NO_2		
Tipperary Town	10.8	6.7	–	0	–
Shannon Estuary/Askeaton, Co. Limerick	8.4	4.8	–	0	–
Carrick-on-Shannon	8.9	5.4	10	0	0
Enniscorthy	13.3	9	–	2	–
Birr	13.1	8.3	11.3	1	0
Macroom	11.3	7.3	–	0	–
Castlebar	9.9	–	6.6	0	0
Cobh Carrignafoy	11.8	6.8	–	0	–
Claremorris	8.1	5.2	–	0	–

[5]Environmental Protection Agency (EPA), "Guidance on the Assessment of Dust from Demolition and Construction," EPA, 2016.

Kilkitt	7.1	–	1.7	0	0
Cavan	10.0	6.4	–	0	–
Roscommon Town	9.7	6.4	–	0	–
Edenderry	16.3	12.4	8.6	6	0
Mallow	10.5	6.1	–	2	–
Longford	13.1	9.2	–	2	–
Cobh Cork Harbour	11.4	–	–	0	–
Killarney, Co. Kerry	8.9	5.4	–	0	–
Malin Head	12.8	6.8	–	0	–
Emo Court Co. Laois	–	–	2.3	–	0
Briarhill	–	–	16.1	–	0
Cork Glanmire Rd	–	7.6	–	–	–
Average	10.86	7.11	8.01	-	-

10.85 Table 10.7 illustrates that average PM_{10}, $PM_{2.5}$, and NO_2 concentrations at quality zone D monitoring stations for 2023 are below the Air Quality Standards (AQS). The average annual mean across all monitoring stations located in air quality zone D for PM_{10}, $PM_{2.5}$, and NO_2 are 10.86, 7.11, and 8.01, respectively. The Claremorris monitoring station, located approx. 43km north of the proposed development, is the closest monitoring station in air quality zone D that has long-term and up to date PM_{10}, $PM_{2.5}$, and NO_2. There were 0 exceedances of the 24-hour mean PM_{10} concentration of 50µg/m^3 at the Claremorris monitoring station, which should not be exceeded more than 35 times in a calendar year.

Existing Dust Deposition

10.86 Monitoring to date includes all of the quarry operations. Inspection of the quarry surrounds on various occasions show that there is no evidence of soiling or significant amounts of deposited dust on vegetation. There will be no significant effect or change as a result of the proposed development. Potential significant impact on residences from dust resulting from site operations is considered to be negligible.

10.87 Dust deposition monitoring is undertaken at 5 boundary locations of the quarry site (see figure 10.4 below).

10.88 The dust deposition limits as previously mentioned are outlined in the existing conditions for the quarry (Galway County Council Plan File Ref. No. 09/1958 & ABP Ref: PL 07.235821) and are shown below:

'Dust levels at the site boundary shall not exceed 350 milligrams per square metre per day averaged over a continuous period of 30 days (Bergerhoff Gauge).'

10.89 The 2023 AER for Coshla Quarry reports that "the dust results recorded in 2023 show a single non-compliance (1 of 60 results)."

10.90 It further explains that "crushing continues to take place at a bench level lower than the general quarry ground level, there should never be an issue with dust emissions, and mitigations are in place, primarily for H&S purposes, to employ a water bowser to spray areas when and where dust suddenly increases in dry weather in order to ensure visibility within the quarry for traffic. Therefore, if emissions are ever likely to be raised, it would be only in periods of dry weather, and where work was progressing in close proximity to a single dust monitoring location."

Figure 10.4: Dust deposition monitoring locations

Impact Assessment

10.91 The construction, operational and restoration phases are included as part of the impact assessment due the potential for each of the phases to be occurring at the same time.

Dust Assessment

10.92 A summary of the risk assessment of dust impacts from sources within the proposed development is presented in Table 10.8 below.

Table 10.8 Summary of the impact assessment results

Receptor	Source Emissions Risk	Pathway Effectiveness	Dust Impact Risk	Receptor Sensitivity	Magnitude of Dust Effect
Receptor 1	Medium	Moderately effective	Low Risk	High	Slight Adverse Effect
Receptor 2	Medium	Ineffective	Negligible Risk	High	Negligible Effect
R3 - Cashla Substation	Medium	Highly effective	Medium Risk	Medium	Slight Adverse Effect
R4 - C&F Tooling	Medium	Moderately effective	Low Risk	Medium	Negligible effect

10.93 From Table 10.8, it is observed that the risk of impact from dust emissions associated with the proposed development (without any mitigation measures in place) varies from slight adverse effect at receptor 1 and 3 and negligible effect at receptor 2 and 4.

10.94 Note that this does not take into account implementation of mitigation measures within the proposed development that include existing screening berms, dust suppression measures etc. (outlined in the Mitigation Measures section below).

10.95 Table 10.9 below provides a detailed overview of potential dust impacts associated with specific operational activities within the proposed development, in accordance with EPA Guidelines (2022). This table categorises dust-generating scenarios by activity type, describing the nature and significance of each effect, as well as its expected extent, frequency, and likelihood.

10.96 Key activities assessed include:

- **Blasting and Extraction**: Emission from drilling and blasting are generally relatively low and do not travel far from the source. These operations are expected to produce dust emissions that may affect areas within 100 meters of the source, with dust potentially traveling up to 400 meters. Given the controlled nature of blasting, the probability of significant impact remains low, with dust effects generally localised and occurring, typically, once every five weeks, potentially increasing to twice in that period.

- **Stockpiling**: Dust from stockpiles has a slight negative effect and is primarily localised to within 100 meters of the source, with an unlikely probability of affecting areas up to 400 meters.
- **Haulage**: Vehicle movements on unpaved roads are identified as having a moderate impact on local air quality, as dust may be generated frequently.
- **Crushing and Screening**: Dust from material processing equipment is considered slight in magnitude, and is primarily localised to within 100 meters of the source, with an unlikely probability of affecting areas up to 400 meters.
- **Heavy-Duty Vehicle Traffic (Off-Site)**: Emissions from HDVs entering and exiting the site are expected to be imperceptible, with effects localised along transport routes and a low probability of significant air quality impact.

10.97 Table 10.9 provides a clear summary of the potential air quality impacts under each activity, setting the basis for targeted dust control measures to mitigate effects on sensitive receptors.

Table 10.9 Air Quality Impact Summary Table (Based on EPA Guidelines 2022)

Scenarios	Activity	Nature and Description of the Effect	Quality of Effect	Significance of Effect	Extent & Context of Effect	Probability of Effects	Duration and Frequency
Site Preparation/ Restoration	Site preparation/restoration	Dust emissions from soil movement and heavy plant operations	Negative	Slight	Local impact within 100 m, potential for travel up to 400 m	Unlikely	Long-term, occasional
Quarry Operations (Blasting and Extraction)	Blasting and extraction	Dust emissions from blasting and material handling	Negative	Slight	Local impact within 100 m, potential for travel up to 400 m	Unlikely	Long-term, monthly
Materials Handling	Material handling	Dust generated by plant on uneven surfaces	Negative	Slight	Localised to quarry void area	Unlikely	Long-term, frequent
On-site Transportation	Haulage	Dust from vehicle movements on unpaved haul roads	Negative	Slight	Local, along internal haul routes	Unlikely	Long-term, frequent
Stone Processing	Crushing and screening	Dust emissions from crushing and screening equipment	Negative	Slight	Local impact within 100 m, potential for travel up to 400 m	Unlikely	Long-term, occasional
Stockpiling Materials On-Site	Stockpiling	Dust from stockpiled materials	Negative	Slight	Local impact within 100 m, potential for travel up to 400 m	Unlikely	Long-term, occasional

Scenarios	Activity	Nature and Description of the Effect	Quality of Effect	Significance of Effect	Extent & Context of Effect	Probability of Effects	Duration and Frequency
Off-site Transportation	HDV traffic	Emissions from heavy-duty vehicles on paved roads	Negative	Not significant	Local, along transport routes	Unlikely	Long-term, frequent

PM_{10} Assessment

10.98 The background annual mean hourly PM10 concentrations (µg/m3) for the Claremorris monitoring station from 2021 to 2024 are less than 17 µg/m3. The IAQM recommend that if the PM10 background concentration is less than 17 µg/m3 there is little risk that the process contribution (PC) from the site would lead to an exceedance of the annual mean objective. It is therefore unlikely that the Pm10 contribution from the site would lead to an exceedance of the AQS.

10.99 In terms of PM_{10}, the annual mean concentration was 10.86 μ g/m³ in 2023 at monitoring stations located in air quality zone D (refer to Table 10.7). The potential contribution of 5 μ g/m^3 towards annual mean background concentrations of the coarse fraction (2.5 – 10 μ m diameters) of particulates (in the immediate area of the site) is considered to be insignificant and well below the annual objective of 40 μ g/m³. It also remains below the annual limit of 20 μ g/m³ established by Directive (EU) 2024/2881, which must be achieved by 2030.

10.100 In terms of $PM_{2.5}$ the annual mean concentration was 7.11 μ g/m³ in 2023 at monitoring stations located in air quality zone D (refer to Table 10.7). This is below the annual objective of 25 μ g/m^3. It also remains below the annual limit of 10 μ g/m³ established by Directive (EU) 2024/2881, which must be achieved by 2030.

10.101 Therefore, the potential impacts in relation to increase in ambient PM_{10} and $PM_{2.5}$ concentrations can be classified as 'not significant'.

Traffic Emissions Assessment

10.102 For the purposes of assessment, the projected traffic movements associated with the development based on a 50-week year, 5.5 days per week, and 20 tonne loads, will result in up to 55 Annual Average Daily Traffic (AADT), with no significant changes to either road alignment or speed – refer to Chapter 13 Traffic.

10.103 Therefore, as none of the roads in the surrounding road network meet any of the traffic / alignment criteria set out in the TII 2022 Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document, then the impact of the scheme can be considered to be 'negligible' in terms of local air quality and no further air quality assessment is deemed necessary.

10.104 On this basis, the impact of the proposed limestone extension and continuation of use from the change of HDVs traffic can be screened out and combustion emissions (primarily oxides of nitrogen) from vehicle exhaust emissions associated with the transportation of materials will not have the potential to contribute to local air pollution.

Mitigation Measures

Existing Mitigating Features

Existing Screening Berms, Hedgerows and Trees

10.105 The presence of established screening berms, hedgerows and trees in the vicinity of the quarry site provides a degree of natural shielding against the dispersion of dust emissions downwind of the prevailing winds. These vegetation features act as physical barriers that can help intercept and trap airborne particulate matter, thereby reducing the extent to which dust travels beyond the immediate operational area. However, it is acknowledged that while hedgerows and trees contribute to dust mitigation, their effectiveness may vary based on factors such as wind direction, foliage density, and the particle size of the emitted dust.

Topography

10.106 The topography of the site includes a quarry void (i.e., a lower-level excavation area) and the surrounding ground level. The quarry void itself provides some level of natural mitigation against dust dispersal from sources such as the processing (e.g., crushing and screening plant) due to its lower elevation acting as a partial barrier to wind. However, other dust sources located at ground level, such as the concrete batching plant, stockpiles, and vehicle movements, do not benefit from this topographical mitigation and are more exposed to wind.

Mitigation Adequacy

10.107 The presence of hedgerows, trees, and changes in elevation offers initial mitigating effects on dust emissions from the proposed continuation of use and quarry extension. While these features contribute to reducing dust dispersion, it is prudent to acknowledge that they might not provide complete containment. Thus, the effect of hedgerows, trees and topography of the dispersion of dust will not be included in this assessment to ensure a conservative approach.

Site Specific Mitigation Measures

10.108 Table 10.9 shows the site specific mitigation measures for the proposed development.

Table 10.9 Proposed mitigation measures

Source	Emission Potential	Mitigation Measures	Effectiveness
Excavators/HDV	High – dry or fine material during strong windy weather	Minimise drop heights when handling materials. Avoid working in adverse/ windy conditions.	High
	Low – material of high moisture content during conditions of low wind speed		High
Onsite Vehicles	High when travelling over un-surfaced and dry site roads	Minimise distances of onsite haul routes.	High
		Use of water sprays / tractor & bowser to moisten surfaces during dry weather.	High
		Restrict vehicle speeds through signage / staff training.	High
		Location of haul routes away from sensitive receptors.	High
Road Vehicles (transfer offsite)	Low / Moderate on paved road surfaces	Use of road sweeper to reduce the amount of available material for re-suspension.	High
		Existing wheel wash	High

		Existing paved access road	High
Stockpiles	High when dry or fine material being stored or handled during strong windy weather	Located within quarry void	High
		Limit mechanical disturbance.	High
Processing Plant	High – during dry and strong windy weather	Retention of hedgerows	High
		Existing perimeter berms	High
		Avoid working in adverse weather conditions	High
		Locate plant within quarry void, where possible.	High

10.109 A Dust Management Plan has been prepared for the quarry development – refer to Appendix 10.B.

Residual Impacts

10.110 With the range of mitigation measures to be implemented and design measures to be incorporated into the working scheme, it is considered that the risk of dust impact at receptors from the proposed development reduces further. The proposed screening berms act as significant mitigation measures against the dispersal of dust.

10.111 After an assessment of potential adverse effects produced by the development it was concluded that there would be no significant adverse air quality effects for both human and ecological receptors.

Table 10.11 Residual Air Quality Impact Summary Table (Post-Mitigation)

Scenarios where impacts may arise	Activity	Nature and Description of the Effect	Residual Significance of Effect	Probability of Residual Effects
Site Preparation and Restoration	Site preparation/restoration	Dust emissions from soil movement and heavy plant operations	Not significant	Unlikely
Quarry Operations (Blasting and Extraction)	Blasting and extraction	Dust emissions from blasting and material handling	Not significant	Unlikely

Materials Handling	Material handling	Dust generated by plant on uneven surfaces	Not significant	Unlikely
On-site Transportation	Haulage	Dust from vehicle movements on unpaved haul roads	Not significant	Unlikely
Mineral Processing	Crushing and screening	Dust emissions from crushing and screening equipment	Not significant	Unlikely
Stockpiling Materials On-Site	Stockpiling	Dust from stockpiled materials	Not significant	Unlikely
Off-site Transportation	HDV traffic	Emissions from heavy-duty vehicles on paved roads	Not significant	Unlikely

Cumulative Impacts

10.112 The cumulative impacts are those which result from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed development. Therefore, the potential impacts of the proposed development cannot be considered in isolation but must be considered in addition to impacts already arising from existing or planned development.

10.113 This section evaluates the potential cumulative impacts on air quality resulting from the proposed continuation and extension of the existing limestone quarry, in conjunction with other developments listed in Table 1.3 of this EIAR.

Assessment of Other Developments:

10.114 **EIRGrid PLC (Ref 2560052):** For the proposed development within County Galway will comprise: •the replacement ("restringing") of the existing OHL circuit conductor wires with a new higher capacity conductor; •Replace tower in situ at 1no. location;•Retain towers at 3no. locations including foundation strengthening with bar member replacement at 2 locations;•Replace polesets at 15no. locations;•the replacement of insulating and ancillary hardware at structures;•all associated temporary site development works to gain access: **Decision Due Date**: 16/03/2025

10.115 **ESB Telecoms Ltd. (Ref. 24260):** The installation of solar panels over an existing telecommunications cabin is a minor development with limited construction activities. Operational emissions are negligible, and the project is not anticipated to contribute significantly to cumulative air quality impacts.

10.116 **C&F Tooling Ltd. (Ref. 2360948 / ABP-320248-24):** The retention of extensions to existing industrial premises involves structures already in place. As these are existing operations, no additional air emissions are expected beyond current levels, which are already accounted for in background air quality data.

10.117 **EirGrid plc. (Ref. 23355):** The upgrade of an existing 220 kV overhead line includes refurbishment works that may generate temporary dust emissions during construction. However, due to the transient nature and widespread dispersion of activities, significant cumulative impacts on air quality are unlikely.

10.118 **Renewable Energy Systems Ltd. (Refs. 20961 & 2261105):** The construction of solar photovoltaic (PV) energy developments over approximately 165 hectares combined may produce dust and emissions from machinery during the construction phase. The operational phase will have minimal emissions. Given the implementation of standard dust mitigation measures and the distance from the quarry, significant cumulative impacts are not anticipated.

10.119 **Apple Distribution International (Ref. 15488 / ABP-07.245518):** The construction of a data centre and associated facilities may contribute to dust and emissions during construction. With appropriate mitigation measures in place, these impacts are expected to be localized and temporary. Operational emissions are minimal and not expected to significantly affect air quality.

10.120 **Engie Developments Ireland Limited (Ref. 181883 / ABP-304922-19):** The development of a 100 MW Battery Energy Storage Facility may generate minor dust emissions during construction. The operational phase will have negligible emissions, and therefore, significant cumulative impacts are unlikely.

10.121 Considering the nature, scale, and implementation of mitigation measures for these developments, the cumulative impact on air quality is expected to be minor and not significant. The effective dust management practices currently employed by the quarry will continue to ensure compliance with air quality standards.

10.122 The cumulative assessment indicates that the combined activities of the quarry and the identified developments will not result in significant adverse impacts on air quality. No additional mitigation measures beyond those already proposed are deemed necessary.

10.123 The cumulative impact of the proposed development with respect to emissions to air will be not significant.

‘Do Nothing Scenario’

10.124 In the Do-nothing scenario, the existing quarry operations are to be maintained at existing levels. From an air quality perspective, no significant changes in air quality are expected. Therefore, it should be noted that this proposal and current operations are similar in nature.

Conclusion

10.125 On the basis of the assessment presented above, it is concluded that the proposed development, with the range of mitigation measures to be implemented and design measures incorporated into the working scheme, will not have a dust deposition impact on any assessed receptors.

Monitoring Program

10.126 Dust monitoring locations shall be reviewed and revised where and as/when necessary. The results of the dust monitoring will continue to be submitted to Galway County Council on a regular basis for review and record purposes.

APPENDICES

Appendix 10.A - Methodology

Methodology

10.127 The section elaborates on the IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning (2016) employed to evaluate the effects of deposited dust and fine particulates stemming from extraction activities. This approach adheres to a conventional methodology involving source-pathway-receptor considerations. This report followed the guidelines as part of the assessment.

10.128 The residual source emissions are characterised based on the scale of the operations and the site activities and are classified as either small, medium or large.

10.129 Directions regarding the suitable categorization of the residual source are outlined in the IAQM guidance, specifically outlined in Appendix 4 from 2016. This characterisation of the source encompasses an evaluation of the standard management and mitigation measures that will be executed at the site.

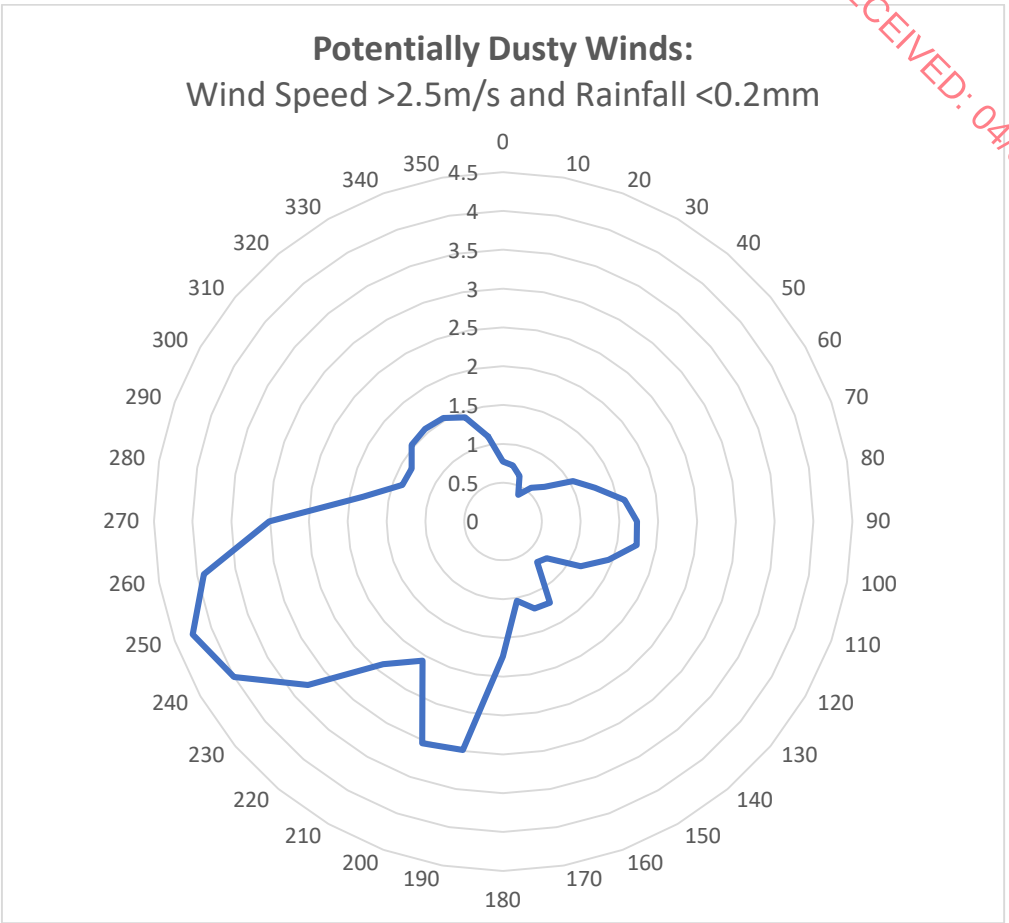
10.130 The evaluation of the pathway from the source to the receptor involves an assessment that considers the distance and orientation of receptors in relation to the prevailing wind and local meteorological conditions. Local meteorological data is also employed to appraise the frequency of winds in each direction. Research findings indicate that deposited dust typically doesn't disperse beyond 400 meters (IAQM, Appendix 2, 2016), thus all receptors located within 400 meters of the site boundary are taken into consideration. The guidance asserts that it's widely accepted that the most significant impacts will manifest within 100 meters of the source, with the potential for dispersion up to 400 meters.

10.131 The criteria utilized for categorising the frequency of potentially dusty winds (Table 10.A2) and the distance between receptors and the source (Table 10.A3) are employed to define the effectiveness of the pathway (Table 10.A4). The residual source emissions and pathway effectiveness are combined to anticipate the potential Dust Impact Risk, as illustrated in Table 10.A5.

Windrose data

10.132 Hourly data from Met Eireann taken from 5th of February 2010 to 5th of September 2024 was used to generate a Windrose (Figure 10.A1) that shows the frequency of potentially dusty winds at Athenry weather station. Potentially dusty winds are classed as having wind speeds greater than 2.5m/s and less than 0.2mm of rainfall as per IAQM guidelines.

Figure 10.A2: Potentially dusty winds from Athenry weather station



Source Emissions Classification

10.133 The source emissions classification is extracted from the IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning. The guidance provides the factors that may be considered when determining if the source emissions will have a small, medium or large risk. The Dust Impact Risk was determined for each of the main operational activities:

10.134 The classification was determined based on the following reasons as per the IAQM 2016 guidance document:

Site Preparation/Restoration:

- The area for site preparation/restoration will include an area <10ha, bunds <8m in height, <10 heavy plant machinery simultaneously active. The site working area will be >2.5ha and there will be >20,000m^3 material movement. Therefore, site preparation/restoration is classified as medium risk.

Mineral Extraction:

- The mineral extraction area will be 13ha and will approx. max 400,000 tonnes per annum of material extracted. Therefore, mineral extraction is classified as medium risk.

Materials Handling:

- The material handling will take place within the quarry void which would suggest a small risk but there will be >5 plant machinery and the ground will be poorly surfaced. Therefore materials handling is classified as small-medium risk.

On-site Transportation:

- The haul roads within the proposed development will be unpaved and have a high road surface of high dust potential. There will be <250 movements of heavy duty vehicles in one day and there will be a maximum speed limit of 15km/h in place on all haul roads. Therefore, on-site transportation is classified as medium risk.

Mineral Processing:

- As there will be a maximum of 400,000 tonnes of rock processed per annum using a mobile crusher and screener with effective design in dust control. Therefore, mineral processing is classified as medium risk.

Stockpiles/Exposed Surfaces:

- The stockpiles will be located >100m from the site boundary. Therefore, stockpiles/exposed surfaces are classified as medium risk.

Off-Site Transportation

- The existing paved access road will continue to be used, along with the existing wheel wash and the access road is >50m in length. Therefore, offsite transportation is classified as medium risk.

Table 10.A1 Source emissions risk

Activity	Source Emissions Risk
Site Preparation and Restoration	Medium
Mineral Extraction	Medium
Materials Handling	Small-medium
On-site Transportation	Medium
Mineral Processing	Medium
Stockpiles and Exposed Surfaces	Medium
Off-site Transportation	Medium

10.135 For the assessment, it is assumed that each of the activities will be classified as medium risk and the distances will be taken from the site boundary and not the location of the individual site activity (see table 10.A1). This is a conservative approach in conducting the assessment.

Frequency of Potentially Dusty Winds

10.136 Table 10.A2 is extracted from the IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning. It shows the categorisation of the frequency of potentially dusty winds. Potentially dusty winds are winds that occur at greater than 2.4m/s and the rainfall is less than 0.2mm.

Table 10.A2 Categorisation of frequency of potentially dusty winds

Frequency Category	Criteria
Infrequent	Frequency of winds (>2.4 m/s) from the direction of the dust source on dry days are less than 5%
Moderately frequent	The frequency of winds (>2.4 m/s) from the direction of the dust source on dry days are between 5% and 12%
Frequent	The frequency of winds (>2.4 m/s) from the direction of the dust source on dry days are between 12% and 20%
Very frequent	The frequency of winds (>2.4 m/s) from the direction of the dust source on dry days are greater than 20%

Receptor Distance from Application boundary

10.137 Table 10.A3 shows the categories for distance from the application boundary to the receptor.

Table 10.A3 Distance categories from the application boundary

Category	Criteria
Distant	Receptor is between 200m and 400m from the application boundary
Intermediate	Receptor is between 100m and 200 m from the application boundary
Close	Receptor is less than 100m from the application boundary

Pathway Effectiveness

10.138 The pathway effectiveness (table 10.A4) is determined using the frequency of potentially dusty winds and the receptor distance from the application boundary.

Table 10.A4 Pathway effectiveness

		Frequency of Potentially Dusty Winds			
		Infrequent	**Moderately Frequent**	**Frequent**	**Very Frequent**
Receptor Distance Category	**Close**	Ineffective	Moderately effective	Highly effective	Highly ineffective
	Intermediate	Ineffective	Moderately effective	Moderately effective	Highly ineffective
	Distant	Ineffective	Ineffective	Moderately effective	Moderately effective

Estimation of Dust Impact Risk

10.139 The dust impact risk (table 10.A5) is determined using the source emissions risk and the pathway effectiveness.

Table 10.A5 Dust impact risk

		Source Emissions Risk		
		Small	**Medium**	**Large**
Pathway Effectiveness	**Highly effective pathway**	Low Risk	Medium Risk	High Risk
	Moderately effective pathway	Negligible Risk	Low Risk	Medium Risk
	Ineffective pathway	Negligible Risk	Negligible Risk	Low Risk

Descriptors for Magnitude of Dust Effects

10.140 The magnitude of dust effects is determined using the sensitivity of the receptor. Table 10.A6 shows the magnitude of the dust effects.

Table 10.A6 Magnitude of dust effects

		Receptor Sensitivity		
		Low	**Medium**	**High**
Dust Impact Risk	**High Risk**	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
	Medium Risk	Negligible Effect	Slight Adverse Effect	Moderate Adverse Effect
	Low Risk	Negligible Effect	Negligible Effect	Slight Adverse Effect
	Negligible Risk	Negligible Effect	Negligible Effect	Negligible Effect

Appendix 10.B – Dust Management Plan

QUARRY CONSULTING

DUST MANAGEMENT PLAN

Existing Limestone Quarry and Concrete Manufacturing Facility at Barrettspark, Athenry, Co. Galway

CLIENT NAME: COSHLA QUARRIES LTD.

REFERENCE: 72.01

FEBRUARY 2025

Contents

Introduction

This dust management plan (DMP) is for the continued operation and extension of an existing limestone quarry at Barretspark, Athenry, Co. Galway. This DMP should be read in conjunction with the main text of the Air Quality Assessment & Dust Management Plan report which contains an assessment of potential dust and PM10 impacts on sensitive offsite receptors, in accordance with the IAQM Guidance on the assessment of mineral dust from quarries.

The guidance document that have been consulted for the preparation of this DMP are:

- Mineral Industry Research Organisation (MIRO), Good practice guide: control and measurement of nuisance dust and PM_{10} from the extractive industries (2011);
- Institute of Air Quality Management (IAQM), Guidance on the Assessment of Mineral Dust Impacts for Planning (2016); and
- The supporting Air Quality Assessment for the Planning Application.

Overview of Dust Management Plan

The components of the DMP are set out within this document as follows:

- Identification of dust sources and influencing factors
- Control Measures
- Monitoring
- Management & Reporting

Dust Sources

Site Setting & Receptors

The site is predominantly surrounded by agricultural land, with the Coshla substation located to the northeast of the site. There are two receptors located within 400m of the site, which includes the Coshla substation and a residential dwelling.

Potential Dust Sources

- Drilling and Blasting
- Material handling – excavators
- Crushing and screening plant
- Material storage and stockpiles
- On-site transportation
- Off-site transportation

Management

Site Management

The quarry manager will exercise, either personally or by delegation to suitably trained and responsible staff, day-to-day control of the site. They will be responsible for the satisfactory working of the whole site and for ensuring full compliance with the DMP.

Quarry Staff

Staff at all levels will receive the necessary training and instruction in their duties relating to all operations and the potential sources of dust emissions. Particular emphasis will be given to plant and equipment malfunctions and abnormal conditions.

Any member of staff who fails to comply with the provisions of the DMP will be retrained as necessary and may also be subject to disciplinary action.

Contractors and Visitors

The quarry manager will ensure that contractors and visitors are aware of the need to comply with the provisions of this plan so far as they are relevant to their activities on site.

Dust Mitigation Measures

The existing and proposed dust mitigation measures that will be in operation throughout the proposed development are outlined in table 1 below.

Table 1: Existing and Proposed Dust Mitigation Measures

Activity	Mitigation Measure
Drilling and blasting	Drill rig is complete with a dust bagging unit.
Material handling	Minimise drop heights when handling materials. Avoid working in adverse/ windy conditions.
Crushing and screening plant	Locate plant within quarry void, where possible. Retention of hedgerows Existing perimeter berms Avoid working in adverse weather conditions
Material storage and stockpiles	Located within quarry void Consideration required to be given to wind conditions prior to working on stockpiles Limit mechanical disturbance.
On-site transportation	Minimise distances of onsite haul routes. Use of water sprays / tractor & bowser to moisten surfaces during dry weather. Restrict vehicle speeds through signage / staff training. Location of haul routes away from sensitive receptors.
Off-site transportation	Use of road sweeper to reduce the amount of available material for re-suspension. Existing truck wash with overhead spray bars Existing paved access road

Concrete batching plant	Use of bag filters Enclosed conveyors Regular inspection and maintenance of dust control equipment to ensure efficiency. Regularly empty dust collectors while avoiding dust emissions.

Monitoring

Meteorological Conditions

Weather forecasts will be monitored on a regular basis to predict weather conditions, such as prolonged dry, hot or significantly strong winds which may generate elevated levels of dust. Using this information, the necessary precautionary measures are employed on site, or certain activities are suspended if necessary.

Visual Dust Monitoring

Dust monitoring will be undertaken visual by site personnel throughout the working day, i.e routine vigilance. In addition, the site manager provides observations and anything noteworthy is recorded in a logbook.

Dust Monitoring

Dust monitoring will continue at the site in compliance with the conditions outlined in Galway County Council Plan File Ref. No. 09/1958 & ABP Ref: PL 07.235821.

Emergency Response Measures

An emergency response procedure is to be followed in the event of major dust emissions.

For the purposes of the emergency response, major dust emissions will be defined as:

- Visible dust crossing the site boundary
- Persistent fugitive dust from mobile plant or haul movements
- Persistent wind-blown dust

Should control measures fail in preventing significant dust emissions, as above, then the following responses will be initiated:

- Relevant plant shall stop work immediately
- A fitter to be called to inspect any malfunctioning plant, if necessary

Complaints Procedure

All complaints will be recorded and reported to the quarry manager, who will investigate the circumstances and ensure that the necessary corrective measures are taken.

A prompt response will be made to the complainant and a record, including copies of all correspondence, will be held in a secure place at the quarry office.