25. ONSHORE AIR QUALITY

25.1 Introduction

This chapter identifies, describes and assesses the potential significant direct and indirect effects on air quality arising from the construction, operation and maintenance, and decommissioning phases of the Onshore Site of the Project.

The Onshore Site is located in Co. Clare between a location approximately 3.5 kilometres (km) northwest of Doonbeg, extending southeast, north of Kilrush Town, and towards Moneypoint Power Station (see Figure 1-1 of Chapter 1 for the Site location context).

As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following references: the 'Project', the 'Onshore Site', the 'Offshore Site, the 'Onshore Grid Connection', the 'Onshore Compensation Compound' and the 'Onshore Landfall Location'. The Onshore Site refers to all onshore elements of the Projects, which includes the Onshore Landfall Location (OLL), Onshore Grid Connection (OGC), Onshore Compensation Compound (OCC). The Project connects to the national grid at the existing Moneypoint 220kV Substation. The townlands within which the Onshore Site is located can be found in Chapter 1 Table 1-1 of this EIAR. The Offshore Site includes the OAA, located between 5 km and 11.5 km off the coast of Connemara Co. Galway, the 'Offshore Export Cable' (OEC), 'Offshore Export Cable Corridor' (OECC) and Landfall at Killard, Co. Clare. The effects on air quality due to the presence of the Offshore Site as part of the Project are addressed in Chapter 19: Offshore Air Quality and Airborne Noise. This chapter also addresses the impacts of the Offshore Site to Mace Head Atmospheric Research Station, which measures atmospheric pollutants and provides air quality data for Europe, while also being part of internationally recognised research networks

It is expected that air quality in the existing environment is good, since there are very few major sources of air pollution (e.g., heavy industry) in the vicinity of the Onshore Site. Moneypoint Power Station is located within the vicinity of the site. Moneypoint is currently a coal fired power station, with oil used as a secondary fuel, which intends to transition from coal fired generation by the end of 2025, to an oil only fired station.[1] Moneypoint Power Station application (ABP Pl. Ref: PA03.319080) was granted permission by An Board Pleanála on 25th September 2024, for the transition and conversion of the existing 900MW coal fired electricity generating station to heavy fuel oil (HFO)[2]. The recently granted permission for the change of fuel use at this site will facilitate a conversion from its primary fuel source (coal) to Heavy Fuel Oil and a change to its operation to a generator of last resort, with limited run hours from 2024, up until the end of 2029, where the ESB intends to transform the site to an Offshore Renewable Energy hub. This is considered further within this chapter.

Air Quality Sampling at the Onshore Site was deemed to be unnecessary for this EIAR due to both the non-industrial nature of the current site and surrounding landscape and following the EPA's Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)[3], which recommends the use of "fully validated EPA data .... where available in preference to site specific monitoring data" for pollutants which are regulated under the CAFE Directive. This approach was followed in the recent

[1] *ESB (2024). Moneypoint Power Station. Available at: << https://esb.ie/media-centre-news/ask-esb/moneypoint-power-station >>*
[2] *https://www.pleanala.ie/en-ie/case/319080*
[3] *EPA & OEE (2019). Air Dispersion Modelling from Industrial Installations Guidance Note (AG4). Available at: << https://www.epa.ie/publications/compliance--enforcement/air/air-guidance-notes/EPA-Air-Dispersion-Modelling-Guidance-Note-(AG4)-2020.pdf >>*

assessment of potential impacts to air quality due to the change of fuel use in Moneypoint Power Station from Coal to Heavy Fuel Oil (HFO)[4]

The production of energy from wind turbines has no direct emissions as is expected from coal or oil-based power stations. Harnessing more energy by means of wind farms will reduce dependency on oil, gas and coal power stations, thereby resulting in a reduction in harmful emissions that can be damaging to human health and the environment. Some minor indirect emissions associated with the construction of the Project include vehicular and dust emissions.

A full description of the Onshore Site and the Project as a whole are detailed in Chapter 5: Project Description.

25.1.1 Statement of Authority

This section of The EIAR has been prepared by Keelin Bourke and reviewed by Órla Murphy and Sean Creedon, all of MKO.

Keelin is an Environmental Scientist with MKO, with over 1 years' experience in private consultancy, having joined the company in September 2023. Keelin holds a BSc (Hons) in Environmental Science from University College Cork and an MSc (Dist) in Environmental Engineering from Trinity College Dublin. Prior to taking up her position with MKO, Keelin worked as an Environmental Health and Safey Officer in an EPA licensed Waste Transfer Facility in Cork City. Keelin's current key strengths and areas of expertise are in environmental surveying, report writing and environmental mapping. Since joining MKO, Keelin has become a member of the MKO Environmental Renewables Team and has been involved in preparing and managing air quality assessments in order to produce robust Environmental Impact Assessment Reports for large-scale onshore and offshore wind energy developments.

Órla Murphy is a Senior Environmental Scientist with MKO. with 8 years of experience in private consultancy. Órla holds BSc (Hons) in Geography from Queens University Belfast & a MSc in Environmental Protection and Management from the University of Edinburgh. Prior to taking up her position with MKO in January 2018, Órla worked as an Environmental Project Assistant with ITPEnergised in Scotland. On joining MKO Órla has been involved on a range of renewable energy infrastructure projects. In her role as a project manager, Órla works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs. Within MKO, Órla plays a role in the management of and sharing of knowledge with junior members of staff and works as part of a large multi-disciplinary team to produce EIA Reports.

Sean is an Associate Director in the Environment Team at MKO. He oversees a team of highly skilled environmental professionals working on EIAR for large-and medium scale Renewable Energy infrastructure. Sean has directed and overseen multiple renewable energy projects across wind, solar, battery and hydrogen as well as a range of thermal and other energy related developments. He has worked on the planning and environmental impact elements within all stages of wind farm project delivery. He is a member of the MKO senior management team responsible for developing the business, mentoring team members, fostering a positive culture and promoting continuous employee professional development. Sean has over 22 years' experience in program and project development, holds an MSc from NUI Galway and a Diploma in Project Management from Institute of Project Management Ireland.

[4] *Mott McDonald (2024). Moneypoint Security of Supply Environmental Impact Assessment Report. Available at: <<* https://www.pleanala.ie/publicaccess/EIAR-NIS/319080/EIAR%20Volume%202%20-%20EIAR%20-%20Moneypoint%20Security%20of%20Supply.pdf?r=297664 *>>*

25.1.2 Relevant Guidance

The air quality section of this Environmental Impact Assessment Report (EIAR) has been completed in accordance with the EIA Directive 2011/92/EU as amended by Directive 2014/52/EU and having regard, where relevant, to the guidance listed below:

- Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document PE-ENV-01106 (Transport Infrastructure Ireland, December 2022)
- Air Quality Assessment of Proposed National Roads – Standard PE-ENV-01107' (Transport Infrastructure Ireland, December 2022).
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports – June 2022' (EPA, 2022).
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report' (EC, 2017)
- Air Quality in Ireland Report 2022. (Environmental Protection Agency, 2023)
- Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects. (Environmental Protection Agency, 2021)
- Air Quality in Europe 2022. (European Environment Agency, 2022)
- Guidance on the Assessment of Dust from Demolition and Construction V2.2 (IAQM 2024)
- Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (TII, 2011)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (TII, 2009)
- Rialtas na hÉireann, Clean Air Strategy for Ireland (April 2023)
- UK Department of Environment Food and Rural Affairs (DEFRA) Part IV of the Environment Act 1995: Local Air Quality Management, (LAQM) (DEFRA, 2018);
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) – LA 105 Air Quality (UKHA 2019)
- World Health Organization (WHO) Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide Global Update 2005 (WHO 2005).

25.2 Air Quality

25.2.1 Relevant Legislation

In order to reduce human health risk resulting from poor air quality, national and European statutory bodies set limit values in ambient air for a range of pollutants. The applicable legal standards in Ireland are described below.

In 1996, the Air Quality Framework Directive (on ambient air quality assessment and management) (96/62/EC) was published. This Directive was transposed into Irish law by the Environmental Protection Agency Act 1992 (Ambient Air Quality Assessment and Management) Regulations 1999 (S.I. No 33 of 199). The Directive was followed by four Daughter Directives, which set out limit values for specific pollutants:

- The first Daughter Directive (1999/30/EC) addresses sulphur dioxide, oxides of nitrogen, particulate matter and lead.
- The second Daughter Directive (2000/69/EC) addresses carbon monoxide and benzene.

- The first two Daughter Directives were transposed into Irish law by the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).
- A third Daughter Directive, Council Directive (2002/3/EC) relating to ozone was published in 2002 and was transposed into Irish law by the Ozone in Ambient Air Regulations 2004 (SI No. 53 of 2004).
- The fourth Daughter Directive[5] (2004/107/EC), published in 2004, relates to polyaromatic hydrocarbons (PAHs), arsenic, nickel, cadmium and mercury in ambient air and was transposed into Irish law by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations, 2009 (S.I. No. 58 of 2009, as amended by the Air Quality Standards (Amendment) and Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air (Amendment) Regulations, 2016 (S.I. 659 2016).

The Air Quality Framework Directive and the first three Daughter Directives were replaced by the Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC on ambient air quality and cleaner air for Europe) (as amended by Directive EU 2015/1480), which was transposed into Irish law by SI 739/2022 Ambient Air Quality Standards Regulations 2022, and encompasses the following elements:

- The merging of most of the existing legislation into a single Directive (except for the Fourth Daughter Directive) with no change to existing air quality objectives.
- New air quality objectives for particulate matter less than 2.5 micrometres (µm), referred to as PM2.5, including the limit value and exposure concentration reduction target.
- The possibility to discount natural sources of pollution when assessing compliance against limit values.
- The possibility for time extensions of three years for particulate matter less than 10µm (PM10) or up to five years (nitrogen dioxide, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

Table 25-1 below sets out the limit values of the CAFE Directive, as originally derived from the Air Quality Framework Daughter Directives. Limit values are presented in micrograms per cubic metre (µg/m^3) and parts per billion (ppb). The notation PM_{10} is used to describe particulate matter or particles of 10µm or less (coarse particle) in aerodynamic diameter. $PM_{2.5}$ represents particles measuring less than 2.5µm (fine particles) in aerodynamic diameter.

The CAFE Directive was initially transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) as amended by the Air Quality Standards (Amendments) and Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations, 2016 (S.I. 659 2016). The 2011 Regulations superseded the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and the Ambient Air Quality Assessment and Management Regulations 1999 (S.I. No. 33 of 1999). The Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) was revoked on 31 December 2022 and has been replaced by the Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022).

25.2.2 Air Quality Standards

The recently implemented Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022) remains aligned to the CAFE Directive and diverts to the CAFE Directive for the Limit values outlined

[5] *IEEP Fourth Daughter Directive 2004. Available at: https://ieep.eu/publications/the-fourth-air-quality-daughter-directive-impacts-and-consequences-of-mandatory-limits/*

in Table 25-1, the Assessment Thresholds in Table 25-2, the Ozone Target Values and Assessment Thresholds in in Table 25-3 and Table 25-4 respectively.

Table 25-1 Limit values of the CAFE Directive 2008/50.EC, Source: https://airquality.ie/information/air-quality-standards)

Pollutant	Limit Value Objective	Averaging Period	Limit Value (ug/m^3)	Basis of Application of Limit Value	Attainment Date
Sulphur dioxide (SO_2)	Protection of Human Health	1 hour	350	Not to be exceeded more than 24 times in a calendar year	1st January 2005
Sulphur dioxide (SO_2)	Protection of human health	24 hours	125	Not to be exceeded more than 3 times in a calendar year	1st January 2005
Sulphur dioxide (SO_2)	Protection of vegetation	Calendar year	20	Annual mean	19th Jul 2001
Sulphur dioxide (SO_2)	Protection of vegetation	1st Oct to 31st Mar	20	Winter mean	19th Jul 2001
Nitrogen dioxide (NO_2)	Protection of human health	1 hour	200	Not to be exceeded more than 18 times in a calendar year	1st Jan 2010
Nitrogen dioxide (NO_2)	Protection of human health	Calendar year	40	Annual mean	1st Jan 2010
Nitrogen monoxide (NO) and nitrogen dioxide (NO_2)	Protection of vegetation	Calendar year	30	Annual mean	19th Jul 2001
Particulate matter 10 (PM_{10})	Protection of human health	24 hours	35	Not to be exceeded more than 35 times in a calendar year	1st January 2005
Particulate matter 10 (PM_{10})	Protection of human health	Calendar year	40	Annual mean	1st January 2005
Particulate matter 2.5 ($PM_{2.5}$) Stage 1	Protection of human health	Calendar year	25	Annual mean	1st Jan 2015

Pollutant	Limit Value Objective	Averaging Period	Limit Value (ug/m^3)	Basis of Application of Limit Value	Attainment Date
Particulate matter 2.5 ($PM_{2.5}$) Stage 2	Protection of human health	Calendar year	20	Annual mean	1st Jan 2020
Lead	Protection of human health	Calendar year	0.5	Annual mean	1st January 2005
Carbon Monoxide	Protection of human health	8 hours	10,000	Not to be exceeded	1st January 2005
Benzene	Protection of human health	Calendar year	5	Annual mean	1st Jan 2010

Table 25-2 Assessment Thresholds from CAFE Directive 2008/50/EC

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m3)	Basis of Application of Limit Value
Sulphur dioxide (SO_2)	Upper assessment threshold for the protection of Human Health	24 hours	75	Not to be exceeded more than 3 times in a calendar year
Sulphur dioxide (SO_2)	Lower assessment threshold for the protection of human health	24 hours	50	Not to be exceeded more than 3 times in a calendar year
Nitrogen dioxide (NO_2)	Upper assessment threshold for the protection of human health	1 hour	140	Not to be exceeded more than 18 times in a calendar year
Nitrogen dioxide (NO_2)	Lower assessment threshold for the protection of human health	1 hour	100	Not to be exceeded more than 18 times in a calendar year
Particulate matter 10 (PM_{10})	Upper assessment threshold	24 hours	35	Not to be exceeded more than 35 times in a calendar year
Particulate matter 10 (PM_{10})	Lower assessment threshold	24 hours	25	Not to be exceeded more than 35 times in a calendar year
Lead (Pb)	Upper assessment threshold	Calendar Year	0.35	-

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m3)	Basis of Application of Limit Value
Lead (Pb)	Lower assessment threshold	Calendar Year	0.25	-
Carbon Monoxide (CO)	Upper assessment threshold	8 hours	7000	-
Carbon Monoxide (CO)	Lower assessment threshold	8 hours	5000	-
Benzene (C_6H_6)	Upper assessment threshold	Calendar Year	3.5	-
Benzene (C_6H_6)	Lower assessment threshold	Calendar Year	2	-

Ozone is set out differently in the CAFE Directive in that it sets target values and long-term objectives for Ozone rather than limit values. Table 25-3 presents the target values and long-term target value for Ozone and Table 25-4 details the threshold values for Ozone.

Table 25-3 Target values for Ozone defined in Directive 2008/50/EC

Objective	Parameter	Target Value for 2010	Long-term Objective
Protection of human health	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
Protection of vegetation	AOT40* calculated from 1-hour values from May to July	18,000 µg/m^3.h averaged over 5 years	6,000 µg/m^3.h

** AOT40 is a measure of the overall exposure of plants to ozone. It is the sum of the excess hourly concentrations greater than 80 µg/m3 and is expressed as µg/m3 hours.*

Table 25-4 Thresholds for Ozone defined in Directive 2008/50/EC (Source: EPA[6])

Pollutant	Averaging Period	Threshold
Information Threshold	1-hour average	180 µg/m^3
Alert Threshold	1-hour average	240 µg/m^3

On 26th October 2022, the EU Commission announced a proposed review of Air Quality Standards[7]. The proposed revision will set interim 2030 EU air quality standards, seeking to align more closely with WHO recommendations, while putting the EU on a trajectory to achieve zero pollution for air at the

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

[7] European Commission, Revision of the Ambient Air Quality Directives. <https://environment.ec.europa.eu/topics/air/air-quality/revision-ambient-air-quality-directives_en>

latest by 2050, in synergy with climate-neutrality efforts. To this end, regular reviews of the air quality standards are proposed to reassess them in line with latest scientific evidence as well as societal and technological developments. The first review is proposed to take place by the end of 2028, with the objective of ensuring full alignment with WHO recommendations[8].

The Ambient Air Quality Standards Regulation (2022) made the provisions necessary for the implementation of Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (as amended), establishes the limit values and alert thresholds for concentrations of certain pollutants in ambient air, provides for the assessment of concentrations of certain pollutants in ambient air, provides for the maintenance of ambient air quality, and ensures that adequate information on concentrations of pollutants are made available to the public.

25.2.2.1 Air Quality and Health

In September 2024, the EPA published 'Air Quality in Ireland 2023'[9] which reports that although Ireland met the current EU legal air quality limits in 2023, monitoring results were higher than the more stringent health-based World Health Organization (WHO) air quality guidelines for a number of pollutants including: particulate matter (PM), nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and ozone (O_3). The main sources of these pollutants are the burning of solid fuel in our towns and villages and traffic in our cities. People's health and the health of our environment are impacted by these pollutants. Ireland's ambition in the 'Clean Air Strategy for Ireland' (discussed below) is to move towards the WHO Air Quality guidelines, this will be challenging but will have a significantly positive impact on health. Despite comparing favourably with many of our European neighbours, Ireland's 2023 monitoring results would exceed the soon-approaching 2026 targets.

The European Environmental Agency (EEA) Report, '*Air Quality in Europe 2022*'[10] report highlights the negative effects of air pollution on human health. The report assessed that poor air quality in Europe accounted for premature deaths of approximately 238,000 people in the 27 EU Member States in 2020[11]. In 2020 in the European Union, 96% of the urban population was exposed to levels of fine particulate matter above the health-based guideline level set by the World Health organisation. Furthermore, in 2020 damaging levels of nitrogen deposition to ecosystems were exceed in 75% of the total ecosystems are in the EU-27. This represents a fall of 12% since 2005. The estimated effects on the population in Europe of exposure to NO_2 and O_3 concentrations in 2020 were around 49,000 and 24,000 premature deaths, respectively. From this, 490 Irish deaths were attributable to fine particulate matter ($PM_{2.5}$), 50 Irish deaths were attributable to nitrogen oxides (NO_2) and 70 Irish deaths were attributable to Ozone (O_3).

The Office of Energy Efficiency and Renewable Energy in the United States published an article on August 24th 2023 entitled '*How Wind Can Help Us Breathe Easier.*'[12] This article details the CO_2 emissions from different energy sources over the entire lifespan of the technology. It was found that wind energy produces around 11 grams of CO_2 per kilowatt-hour (g CO_2/kWh) of electricity generated, compared with about 980 g CO_2/kWh for coal and roughly 465 g CO_2/kWh for natural gas. That makes coal's carbon footprint almost 90 times larger than that of wind energy, and the footprint of natural gas more than 40 times larger. During combustion of high-emitting energy sources, other air pollutants, i.e., nitrogen oxides (NO_X) and sulphur dioxide (SO_2), are also released into the atmosphere. This results in the emission of pollutants that can cause adverse health effects, including asthma, bronchitis, lower and

8 Revision of the Ambient Air Quality Directives. <https://environment.ec.europa.eu/topics/air/air-quality/revision-ambient-air-quality-directives_en>
[9] *EPA Air Quality in Ireland Report 2023 < https://www.epa.ie/publications/monitoring--assessment/air/Air_Quality_Report_23_v13_flat.pdf>*
[10] *Air Quality in Europe 2022 <https://www.eea.europa.eu/publications/air-quality-in-europe-2022>*
[11] *ibid*
[12] *Office of Energy Efficiency and Renewable Energy (2023) How Wind Can Help Us Breathe Easier*

upper respiratory symptoms, and heart attacks. Air pollution is responsible for a large number of premature deaths relating to these illnesses.

The EEA published a briefing[13] on Europe's air quality status in April 2024. This briefing presented the status of concentrations of pollution in ambient air in 2022 and 2023 for regulated pollutants in relation to both EU air quality standards and the 2021 WHO guideline levels. The assessment shows that, despite constant improvements, exceedances of air quality standards are common across the EU, with concentrations well above the latest WHO recommendations.

PM_{10}, NO_2 and O_3 emissions, along with others including sulphur oxides, carbon monoxide, benzene and lead are produced during fossil fuel-based electricity generation and traffic in various amounts, depending on the fuel and technology used.

A 2024 EPA report *'Ireland's State of the Environment Report'*[14] states that the pollutants of most concern are Fine Particulate matter ($PM_{2.5}$.), Nitrogen Dioxide (NO_2) and Ammonia (NH_3). The EPA 2024 report further states that:

> *"The planned transition to more renewable energy sources, and away from combustion-sourced heating systems to electrification, is a shift that could see greenhouse gas emissions from industry significantly decrease.*
>
> *As a consequence of meeting these growing demands primarily with oil, natural gas, coal and peat, our energy system is highly dependent on fossil fuels. Ireland has made some progress in transforming the electricity system through the deployment of wind farms, with renewable energy currently providing more than 40% of electricity used. However, electricity represents only one-fifth of Ireland's energy use, and our transport and heating systems remain heavily reliant on fossil fuel systems, with lock-ins that need to be addressed.*
>
> *While Ireland's renewable energy share has increased from 10.7% in 2018 (reported in the last State of the Environment Report) to 13.1% in 2022, this is the lowest level in the EU (well below the EU average of 23.0%), and Ireland is not on track to meet the EU-wide binding target of 42.5% renewable energy share by 2030. Reaching the target of 80% renewable electricity by 2030, while ensuring a stable energy supply, will require new capacity, a more flexible grid and increased interconnectivity (EC, 2024)*
>
> *Established technologies, such as wind energy, solar photovoltaics and bioenergy, will be key in meeting short-term emission reduction targets (i.e. 2030), whereas significant growth in offshore wind infrastructure is expected to be the key essential element of future energy systems."*

The Onshore Site, in supporting the Project therefore represents an important opportunity to harness Ireland's significant offshore renewable energy resources, with valuable benefits to air quality and in turn to human health. The consumption of fossil fuels for energy results in the release of particulates, sulphur dioxide and nitrogen dioxide to our air. The use of wind energy, by providing an alternative to electricity derived from coal, oil or gas-fired power stations, results in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_X), and sulphur dioxide SO_2, thereby resulting in cleaner air and associated positive health effects.

Whilst there is the potential of such emissions to be generated from the construction, operation and maintenance, and decommissioning phases of the Project, mitigation measures will be implemented at

[13] *Europe's air quality status 2024 briefing.* < https://www.eea.europa.eu//publications/europes-air-quality-status-2024>
[14] *Environmental Protection Agency (2024). Irelands State of the Environment Report 2024)* <https://www.epa.ie/our-services/monitoring–assessment/assessment/irelands-environment/state-of-environment-report-/

this site to reduce the impact from dust and vehicle emissions, which are discussed in Section 25.3 below.

25.2.2.2 Clean Air Strategy for Ireland 2023

Ireland's Clean Air Strategy 2023[15] sets out the detail of seven strategic frameworks that will be used to ensure that air quality continues to improve (Figure 25-1). The aims of these key strategic frameworks are:

- To set appropriate targets and limits to ensure continuous improvements in air quality across the country, and to deliver health benefits for all.
- To ensure the integration of clean air considerations into policy development across Government.
- To increase the evidence, base that will help Ireland to continue to evolve it's understanding of the sources of pollution and their impacts on health, in order to address them more effectively.
- To enhance regulation required to deliver improvements across all pollutants.
- To improve the effectiveness of our enforcement systems.
- To promote and increase awareness of the importance of clean air, and the links between cleaner air and better health.
- To develop the additional targeted/specific policy measures as required to deal with national or local air quality issues.

Figure 25-1 Seven Strategic Frameworks for Air Quality, with associated chapters in brackets. Reproduced as Figure 1 from Clean Air Strategy 2023

Chapter 11 of the Clean Air Strategy discusses Air Quality Policy Development. The chapter discusses energy policy and acknowledges how the State's accelerated transition to renewable electricity will be critical to successfully meeting the ambitious renewable energy and greenhouse gas emission reduction targets outlined in the European Green Deal and Ireland's Climate Action Plan 2023 (reaffirmed in the

[15] *Rialtas na hÉireann Clean Air Strategy April 2023. Available at: << https://www.gov.ie/en/publication/927e0-clean-air-strategy/#:~:text=The%20Clean%20Air%20Strategy%20provides,delivering%20on%20wider%20national%20objectives. >>*

most recent Climate Action Plan 2024), as well as to protecting against security of supply risks and removal of fossil fuels from power generation. Wind (offshore and onshore) and solar energy will be the leading cost-effective technologies to achieve our energy and emissions targets, as well as displacing emissions in other sectors, including household heating and vehicle transport.

In the Clean Air Strategy, the Climate Action Plan 2023 is referenced, while Climate Action Plan 2024 is currently the latest revision. The targets of the Climate Action Plan 2024 and the Green Deal are to deliver net-zero GHG emissions by 2050 and reduce GHG emissions to at least 55% by 2030, compared to 1990 levels.

25.2.3 Methodology

The air quality zone for the Onshore Site was selected, followed by a review of EPA collated baseline air quality data, namely Sulphur Dioxide (SO_2), Particulate Matter (PM_{10}), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO) and Ozone (O_3) for the selected air quality zone to determine the representative levels of such emissions for the Onshore Site.

The assessment of the development footprint of the Onshore Site, within this EIAR Chapter, is based on the potential footprint for all of the infrastructural elements as described in Section 1.1 of Chapter 1 of this EIAR. This approach is taken as the assessment of the maximum development footprint, in the absence of mitigation measures, will give rise to the greatest potential for significant effects. Should the development footprint be less, the potential for significant effects will also be reduced.

25.2.3.1 Air Quality Zones

The EPA has designated four Air Quality Zones for Ireland:

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

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the CAFE Directive. The Onshore Site lies within Zone D, which represents rural areas located away from large population centres.

25.2.3.2 Air Quality Data Review

The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, 'Air Quality in Ireland 2023' was published by the EPA in September 2024. The EPA report provides SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D. These are detailed in the Section 25.2.4 below.

As stated previously, Air Quality Sampling at the Onshore Site was deemed to be unnecessary for this EIAR. The potential impact and significance of effects on air quality from emissions listed above during the construction, operation and maintenance, and decommissioning of the Onshore Site is assessed.

25.2.3.3 Dust

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024) was considered in the dust impact assessment. The guidance document outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. This methodology has been used to predict the likely risk of dust as a result of the construction phase works, operational phase maintenance and monitoring activities, and decommissioning phase. The use of UK guidance is considered best practice in the absence of applicable Irish guidance. The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential impacts. These are:

- Demolition (There are no demolition works required for any phase of the Onshore Site)
- Earthworks.
- Construction.
- Trackout[16]

The magnitude of the dust generating activities is divided into 'Large', 'Medium' or 'Small' scale depending on the nature of the activities involved. IAQM (2024) guidance provides example definitions for the scale of the activities, and these are applied for the Onshore Site as outlined in Table 25-5 below.

Table 25-5 Description of magnitude for nature of activities IAQM 2024 Guidance

	Large	Medium	Small
Demolition	Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12m above ground level	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months
Earthworks	Large: Total site area >110,000 m^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 >6 m in height	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height
Construction	Total building volume >75,000 m^3, on site concrete batching, sandblasting	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber)

[16] *The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when Heavy Goods Vehicles (HGVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HGVs transfer dust and dirt onto the road having travelled over muddy ground on site.*

	Large	Medium	Small
Trackout	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m
	Note: A vehicle movement is a one-way journey. i.e. from A to B and excludes the return journey. Heavy duty vehicles (HDV) defined as vehicles with a gross weight greater than 3.5 tonnes, movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.		

The earthwork requirements as outlined in Appendix 5-17: Onshore Grid Construction Methodology of this EIAR results in the classification of the Onshore Site as 'Large' for Earthworks and 'Small' for Construction due to the lower volumes of construction material required. The number of heavy-duty vehicle movements per day, as outlined in Section 29.4 in Chapter 29: Traffic and Transportation of this EIAR, results in the classification of the Onshore Site as 'Medium' for Trackout activities.

The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities.

25.2.3.3.1 *Defining the Sensitivity of the Area*

For the purposes of this assessment, high sensitivity receptors are regarded as residential properties and dust sensitive ecological habitats. 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.

The IAQM (2024) guidance has outlined three types of effects to be considered:

- Sensitivities of People to Dust Soiling Effects
- Sensitivities of People to the Health Effects of PM_{10}
- Sensitivities of Receptors to Ecological Effects

Sensitivities of People to Dust Soiling Effects

Dust deposition impacts can occur for a distance of 250m from works areas, but the majority of deposition occurs within the first 50m (IAQM, 2024). Table 25-6 below identifies the sensitivity of an area to dust soiling effects on people and their properties, relative to different receptor sensitivities.

Table 25-6 Sensitivity of the Area to Dust Soiling Effects on People and Property. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

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

Sensitivities of People to the Health Effects of PM_{10}

When assessing sensitivity of people to the health effects of PM_{10}, the IAQM (2024) guidance recommends the use of sensitivities bands based on whether or not the receptor is likely to be exposed to elevated concentrations of PM_{10} over a 24-hour period. Table 25-7 below identifies the sensitivity of an area to human health effects of PM_{10}, relative to different receptor sensitivities.

Table 25-7 Sensitivity of the Area to Human Health Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Sensitivities of Receptors to Ecological Effects

Dust deposition due to demolition, earthworks, construction and trackout has the potential to physically and chemically affect sensitive habitats and plant communities. Table 25-8 below identifies the sensitivity of an area to ecological impacts.

Table 25-8 Sensitivity of the Area to Ecological Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

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

There are two ecological receptors and habitats within 50m of the development footprint which, as described by the IAQM (2024) guidance, may be sensitive to dust. These ecologically sensitive habitats, and their designations, are listed below:

- Tullaher Lough and Bog SAC (002343), which is adjacent to the Onshore Site. Approximately 1,400m of the OGC route runs alongside this SAC.
- Tullaher Lough and Bog pNHA, the boundary of which extends slightly further than the SAC boundary and hence some of the Onshore Site lies within the edge of this pNHA as it runs in the road adjacent/within this pNHA for approximately 1,400m.
- River Shannon and River Fergus Estuaries SPA (004077) and Lower River Shannon SAC (002165), located adjacent to the Onshore Site for approximately 400m along the OGC route.

These sites have been assessed within Chapter 20: Terrestrial Biodiversity and the Natura Impact Statement (NIS). The individual qualifying features which have the potential to be adversely affected by the OGC construction, along with the site-specific conservation objectives and threats and pressures for the qualifying features of each site were considered. The NPWS Protected Sites Database[17], along with the EEA Natura 2000 datahub[18] were also consulted in order to assess the potential of adverse effects due to the presence of dust within the vicinity of these sites.

A small section of the Tullaher Lough and Bog SAC and pNHA is adjacent to the OGC route, over a distance of approximately 1,400m. The OGC lies downstream of the SAC and pNHA and thus there is no hydrological connectivity via surface water. As this site is within 50m of the OGC construction route, it was assessed in order to quantify the sensitivity of this ecological receptor to dust.

There were a number of Individual Qualifying Features within the designated sites which were assessed for their potential to be affected by dust deposition. There are no Annex I or Annex II species or habitats for which the site was selected as an SAC, which have the potential to be affected by dust. Dust was not considered to be a threat, pressure or activity with impacts on the site. For these reasons, the Tullaher Lough and Bog SAC and pNHA was scoped out of the dust assessment as having a low receptor sensitivity.

No overlap occurs between the OGC construction route and the River Shannon and River Fergus SPA and the Lower River Shannon SAC. The OGC runs adjacent to both sites for approximately 400m near

[17] *National Parks and Wildlife Services (2024). Protected Sites in Ireland. Available at: << https://www.npws.ie/protected-sites >>*
[18] *European Environment Agency (2024). Natura 2000 data - the European network of protected sites. Available at: << https://www.eea.europa.eu/en/datahub/datahubitem-view/6fc8ad2d-195d-40f4-bdec-576e7d1268e4 >>*

Moneypoint. Both sites are located immediately to the southwest of the OGC, at distances of approximately 10-25m. These designated sites are within 50m of the OGC construction route, thus were assessed to quantify the sensitivity of the receptors to dust.

There were a number of Individual Qualifying Features within the designated sites which were assessed for their potential to be affected by dust deposition. There are no Annex 1 or Annex II species or habitats for which the site was selected as an SAC, which have the potential to be affected by dust. Dust was not considered to be a threat, pressure or activity with impacts on the site. The proposed works are minor in nature and short-term, involving the installation of an underground grid connection route primarily within existing road infrastructure and grassy verges within the vicinity of theses designated sites. No source- pathway- receptor chain for any effect on these sites as a result of the OGC was identified. Thus, no further assessment is required, and the Tullaher Lough and Bog SAC and pNHA, River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC are not defined as high sensitivity ecological receptors regarding dust within the context of this air quality assessment.

Further consideration is given to these ecologically sensitive habitats in Chapter 20: Terrestrial Biodiversity and in the Natura Impact Statement accompanying this application.

25.2.3.3.2 Defining the Risk of Impacts

The dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts with no mitigation applied. The matrices in Table 25-9, Table 25-10 and Table 25-11 provide a method of assigning the level of risk for each activity.

Table 25-9 Risk of Dust Impacts - Earthworks (IAQM, 2024)

Sensitivity of Area	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 25-10 Risk of Dust Impacts - Construction

Sensitivity of Area	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 25-11 Risk of Dust Impacts - Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

The risk of dust impacts for the Earthworks, Construction and Trackout activities from the Project is summarised in Section 25.3 below.

EPA classification terminology as presented in Table 4-1 of Chapter 4: Environmental Impact Assessment Methodology of this EIAR have been correlated with the equivalent risk rating from Table 25-9, Table 25-10 and Table 25-11 above and is presented in Table 25-12.

Table 25-12 Correlation of Impact Classification Terminology (EPA, 2022) to Risk Rating

EPA Term	EPA Description	Risk Rating
Imperceptible	An effect capable of measurement but without significant consequences	Negligible
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities	Low
Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends	Medium
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment	High

25.2.4 Baseline Air Quality

The air quality in the vicinity of the Onshore Site is typical of that of rural areas in the southwest of Ireland, i.e., Zone D. Prevailing south-westerly winds carry clean, unpolluted air from the Atlantic Ocean onto the Irish mainland. The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, *'Air Quality in Ireland 2023'* was published by the EPA in September 2024. The EPA reports provide SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D. Values for each of these elements recorded within the Zone D monitoring stations listed in the report, have been averaged to give representative values for Zone D. Similar measurement values for all air quality parameters would be expected for the Onshore Site as it lies in a rural location, within Zone D.

25.2.4.1 Sulphur Dioxide (SO_2)

Sulphur dioxide data for the Zone D sites of Cork Harbour, Kilkitt, Askeaton, Edenderry and Letterkenny in 2023 is presented in Table 25-13.

Table 25-13 Average Sulphur Dioxide Data for Zone D in 2023.

Parameter	Measurement
Annual Mean	4.3 µg/m^3
Hourly values > 350	0.0
Hourly max (Average)	80.9 µg/m^3
Daily values > 125	0
Daily max (Average)	23.2 µg/m^3

During the monitoring period there were no exceedances of the daily limit values of 125 µg/m^3 for the protection of human health. As can be observed from Table 25-13, the average maximum hourly value recorded during the assessment period was 80.9 µg/m^3, lower than the maximum hourly limit value of 350 µg/m^3. In addition, there were no exceedances of the annual mean limit for the protection of

ecosystems. It would be expected, based on professional judgement, that SO_2 values at the Onshore Site would be similar or lower than those recorded for the Zone D sites above.

25.2.4.2 Particulate Matter (PM_{10})

Sources of particulate matter include vehicle exhaust emissions, dust from soil and road surfaces, construction works and industrial emissions. The EPA Air Quality in Ireland 2023 report provides annual mean PM_{10} concentration for seventeen Zone D towns: Tipperary Town, Carrick-on-Shannon/Askeaton, Enniscorthy, Birr, Macroom, Castlebar, Cobh Carrignafoy, Claremorris, Kilkitt, Cavan, Roscommon Town, Edenderry, Mallow, Longford, Cobh Cork Harbour, Killarney, and Malin Head. Particulate matter (PM_{10}) data for 2023 is presented in Table 25-14.

Table 25-14 Average Particulate Matter (PM_{10}) Data for Zone D Sites in 2023.

Parameter	Measurement
Annual Mean	11.0 µg/m³
% Data Capture (Average)	90.8%
Values > 50 ug/m3	Max 6 (Edenderry)
Daily Max (Average)	45.4 µg/m³

The daily limit of 50 µg/m³ for the protection of human health was exceeded on 13 days across all monitoring sites, which is less than the PM_{10} daily limit for the protection of human health of a max 35 days >50 µg/m³ applicable from 2005. The greatest number of exceedances occurred at Edenderry, where the PM_{10} daily limit was exceeded on 6 occasions. In the EPA 2023 report, it is noted that there were breaches in the levels of particulate matter (PM), which in Ireland mainly comes from the burning of solid fuel, such as coal, peat, and wood to heat our homes. Based on professional judgement, it is expected that PM_{10} values at the Onshore Site would be similar or lower than those recorded for the Zone D sites above. Castlebar is considered to be the most similar of the seventeen Zone D sites monitored by the EPA (as listed above) to the Onshore Site, and therefore representative of the study area. This approach was taken in the assessment of air quality at Moneypoint Power Station for the transition and conversion of the existing 900MW coal fired electricity generating station to HFO.

25.2.4.3 Nitrogen Dioxide (NO_2)

Nitrogen dioxide data for Zone D sites of Birr, Castlebar, Carrick-on-Shannon, Edenderry, Emo Court, Kilkitt and Brialhill in 2023 is presented in Table 25-15.

Table 25-15 Average Nitrogen Dioxide Data for Zone D Sites in 2023.

Parameter	Measurement
Annual Mean (Average)	8.1 µg/m³
NO_2 Values >200	0
Values > 140 (UAT)	0
Values >100 (LAT)	4
Hourly Max.	67.6 µg/m³

The annual NO_2 value was below the annual mean limit value for the protection of human health of 40 µg/m³. The lower assessment threshold of 100 µg/m³ was exceeded 4 no. times during the monitoring period in Briarhill, Co. Galway while the upper assessment threshold of 140 µg/m³ was not exceeded during the monitoring period. The 18-day limit during the monitoring period was not exceeded. In 2023, no other monitoring locations in Zone D had exceedances in the lower and upper assessment thresholds of 100 and 140 µg/m³. The average hourly max. NO_2 value of 67.6 µg/m³ measured during the monitoring period was below the hourly max threshold of 200 µg/m³. It would be expected that NO_2 values at the Onshore Site would be similar or lower than those recorded for the Zone D sites above.

25.2.4.4 Carbon Monoxide (CO)

The EPA report provides rolling 8-hour carbon monoxide concentrations for Birr a Zone D site. Carbon Monoxide data for 2023 is presented in Table 25-16.

Table 25-16 Carbon Monoxide Data for Birr – Zone D Site in 2023.

Parameter	Measurement
Annual Mean	0.6 mg/m^3
Median	0.6 mg/m^3
% Data Capture	99.8%
Values > 10	0
Max	2.2 mg/m^3

The average concentration of carbon monoxide was 0.6 mg/m^3. The carbon monoxide limit value for the protection of human health is 10,000 µg/m^3 (or 10mg/m^3). On no occasions were values reported in excess of the 10 mg limit value set out in Directive 2008/69/EC. It would be expected that CO values at the Onshore Site would be similar or lower than those recorded for the Zone D Sites above.

25.2.4.5 Ozone (O_3)

The EPA report provides rolling 8-hour ozone concentrations for seven Zone D sites, Emo Court, Kilkitt, Carnsore Point, Mace Head, Castlebar, Valentia and Malin Head. Ozone (O_3) data for 2023 is presented in Table 25-17. As can be observed there were 10 no. exceedances of the maximum daily eight-hour mean limit of 120 µg/m^3. The legislation stipulates that this limit should not be exceeded on more than 25 days per calendar year averaged over three years per station. It would be expected that O_3 values at the Onshore Site would be similar or lower than those recorded for the Zone D sites below

Table 25-17 Average Ozone Data for Zone D Sites in 2023.

Parameter	Measurement
Annual Mean	61.5µg/m^3
Median	72.8 µg/m^3
% Data Capture	95.5%
No. of days > 120 µg/m^3/8 hours	10 days

25.2.4.6 Dust

There are no statutory limits for dust deposition in Ireland. However, EPA guidance suggests that a deposition of 10 mg/m^2/hour can generally be considered as posing a soiling nuisance. This equates to 240 mg/m^2/day. The German TA-Luft standard for dust deposition sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day. Recommendations from the Department of the Environment, Health & Local Government[12] apply the Bergerhoff limit of 350 mg/m^2/day to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction activities associated with the Onshore Site.

The extent of dust generation at any site depends on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, etc., and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction dust has the potential to be generated from on-site activities such as excavation and backfilling. Construction traffic movements also have the potential to generate dust as they travel along the transport routes.

The potential dust-related effects on local air quality and the relevant associated mitigation measures during the construction, operation and maintenance, and decommissioning phases of the Project are presented in Section 25.3 below.

25.3 Likely Significant Effects and Associated Mitigation Measures

25.3.1 'Do-Nothing Effect'

If the Project doesn't proceed, the opportunity to capture the available renewable energy resource and connect it to Ireland's electricity grid would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. It will not provide the opportunity for an overall increase in air quality or reduction of greenhouse gasses. The current land-use practices of low-intensity agriculture, transport along the public road corridor and recreational amenity would likely continue, and the air quality would likely remain similar to current status recorded for Zone D areas.

However, if the Onshore Site were not to proceed, the Project as a whole would not be accessible and there would be no opportunity to supply renewable electricity generated to the national grid, and the opportunity to reduce emissions of carbon dioxide, oxides of nitrogen (NO_X), and sulphur dioxide (SO_2) to the atmosphere would be lost due to the continued dependence on electricity derived from coal, oil and gas-fired power stations, rather than renewable energy sources, such as the Project. This will result in an indirect negative impact on air quality nationally, regionally and locally.

25.3.2 Construction Phase

25.3.2.1 Exhaust Emissions: Construction of the Onshore Site Infrastructure

Exhaust emissions associated with vehicles and plant such as NO_2, Benzene and PM_{10} will arise as a result of construction activities.

25.3.2.1.1 *Pre-Mitigation Effect*

Onshore Landfall Location, Onshore Compensation Compound, Temporary Construction Compound, Access Tracks

The construction of the OLL infrastructure, temporary construction compounds, new access tracks, OCC and all ancillary works and apparatus will require the operation of construction vehicles and plant onsite giving rise to exhaust emissions. Construction will take place over a short time period, resulting in minor noticeable changes to the character of the environment during this time. Therefore, this is considered a Short-Term, Slight, Negative Effect on air quality that is Not Significant.

Onshore Grid Connection

The construction of the OGC, connecting the OLL to the OCC, and the OCC to the existing Moneypoint 220kV Substation, requires the operation of construction vehicles and plant onsite, therefore giving rise to exhaust emissions. Any impacts will be limited to the active construction area, which will generally be 240m of the OGC per day (with 2 no. crews working in parallel and completing 120m per day) and will be temporary in nature. Due to the 'rolling' nature of construction of the OGC, and the fact that there will be minor noticeable changes in the character of the environment over a

short time along the period of construction of the OGC, this is a Short-Term, Slight, Negative Effect, on air quality that is Not Significant.

Transport to and from the Onshore Site

The transport of OCC infrastructure, construction vehicles, aggregate materials, waste removal vehicles and construction staff to/from the Onshore Site for the construction of the associated Onshore Site infrastructure, (see Chapter 29: Traffic and Transport of this EIAR), will also give rise to exhaust emissions associated with the transport vehicles. This constitutes a Short-Term, Slight, Negative Effect in terms of air quality that is Not Significant. Mitigation measures in relation to exhaust emissions are presented below.

25.3.2.1.2 *Mitigation & Monitoring Measures*

- All construction vehicles and plant used onsite during the construction phase will be maintained in good operational order. If a vehicle requires repairs this work will be caried out, thereby minimising any emissions that arise.
- All machinery will be switched off when not in use.
- Users of the Onshore Site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum.
- Where reasonably practicable, the majority of aggregate materials for the construction of the Onshore Site will be obtained locally from nearby quarries and materials facilities. This will significantly reduce the distances vehicles will have to travel to get to the site, thereby reducing the amount of emissions associated with vehicle movements.
- The chosen Materials Recovery Facility (MRF) facility will be as close as possible to the Onshore Site to reduce the amount of emissions associated with vehicle movements.

25.3.2.1.3 *Residual Effect*

Following implementation of the mitigation measures above, residual impacts of exhaust emissions for the construction phase of the Onshore Site will have a Short-Term, Slight, Negative Effect on air quality, that is considered Not Significant.

25.3.2.1.4 *Significance of Effects*

Based on the evaluation above there will be no significant direct or indirect effects on air quality due to exhaust emissions associated with the construction of the Onshore Site.

25.3.2.2 Dust Emissions: Construction of the Onshore Site Infrastructure

25.3.2.2.1 *Pre-Mitigation Effect*

Dust emissions arise when particulate matter becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated PM_{10} and $PM_{2.5}$concentrations and may also cause dust soiling. The amount of dust generated and emitted from a working site and the potential impact on the surrounding areas varies according to:

- The type and quantity of material and working methods;
- Distance between site activities and sensitive receptors;

- Climate/local meteorology and topography.

Table 25-18 details the National Roads Authority (NRA) 2011 assessment criteria[19] used for assessing the impact of dust from construction activities sites of varying scale.

Table 25-18 NRA Assessment Criteria for the Impact of Dust Emissions from Construction Activities with Standard Mitigation in Place

Source		Potential Distance for Significant Effects* (Distance from source)		
Scale	Description	Soiling	PM_{10}a	Vegetation Effects
Major	Large construction sites, with high use of haul roads	100 m	25 m	25 m
Moderate	Moderate construction sites, with moderate use of haul roads	50 m	15 m	15 m
Minor	Minor construction sites, with limited use of haul roads	25 m	10 m	10 m

**Significance based on the 2005 standard, which allows 35 daily exceedances/year of 50 µg/m3.*

Onshore Landfall Location and Onshore Compensation Compound

The construction of the OLL infrastructure, Temporary Construction Compounds, new access tracks, OCC and all ancillary works and apparatus give rise to dust emissions. Construction materials required for the OLL, OCC and Temporary Construction Compounds (approximately 30,825m^3) will be sourced locally, where reasonably practicable. Construction will not take place at any one location for the full duration of the works, due to the nature of the Onshore Site

This is considered a Short-Term, Slight, Negative Effect on air quality. This potential effect is Not Significant and will be restricted to the duration of the construction phase.

Onshore Grid Connection

The construction of the OGC will give rise to dust emissions. Where reasonably practicable, construction grade materials (approx. 27,000m^3) required for the OGC infrastructure will be sourced locally. The excavation of the OGC will give rise to localised dust emissions. Due to the nature of the proposed construction works along the OGC route, as described in Chapter 5 of this EIAR, which is termed a 'rolling' construction site, these works will not be concentrated in any one area of the route for any considerable length of time.

There are a number of sensitive receptors within the vicinity of the Onshore Site. Some receptors may experience soiling and deposition of vegetation effects depending on how close to the construction works they are located.

The IAQM methodology for *the Assessment of Dust from Demolition and Construction* as discussed in Section 25.2.3.3 is used to predict the likely risk of dust impacts as a result of the construction works. Dust deposition impacts can occur for a distance of 250m from works areas, but the majority of deposition occurs within the first 50m (IAQM, 2024). Sensitive receptors were derived from the constraints identification and mapping process, and a detailed and updated planning search which informed the sensitive property dataset.

[19] *NRA 2011 Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes Available at: <https://www.tii.ie/technical-services/environment/planning/Guidelines-for-the-Treatment-of-Air-Quality-during-the-Planning-and-Construction-of-National-Road-Schemes.pdf>*

- There are 27 no. Sensitive Properties within 20m of the Onshore Site
- There are 88 no. Sensitive Properties within 50m of the Onshore Site
- There are 107 no. Sensitive Properties within 100m of the Onshore Site
- There are 157 no. Sensitive Properties within 250m of the Onshore Site

where construction activities with the potential to generate dust can occur.

Table 25-19 below identifies the sensitivity of the Area to Dust Soiling Effects on People and Property surrounding the development footprint of the Onshore Site to dust soiling effects, based on the definitions in Section 25.2.3.3 above. Receptors were classed as high sensitivity receptors due to the fact that they are residential properties. On assessment of receptor sensitivity and the distance of these receptors from the dust source, the overall sensitivity of the area to dust soiling effects is considered to be Medium.

Table 25-19 Sensitivity of the Area to Dust Soiling Effects on People and property from Onshore Site construction works. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024).

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

Table 25-20 below identifies the sensitivity of people in the area surrounding the development footprint of the Onshore Site to the health effects of PM_{10}, as described in Section 25.2.3.3 above. The overall sensitivity of the area to human health effects of PM_{10} is considered to be Low.

Note, the 'Annual Mean PM_{10} Concentration' column in the table is based on the PM_{10} annual mean concentration for the site, which is expected to be similar or lower than that recorded for Zone D as per Table 25-14 above (11.0 µg/m^3), i.e. the Zone D value is used as a proxy for the Onshore Site annual mean PM_{10} concentration.

Table 25-20 Sensitivity of the Area to Human Health Impacts from Onshore Site construction works. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10				
Low	-	≥1	Low	Low	Low	Low

Table 25-21 below identifies the sensitivity of ecological receptors in the area surrounding the development footprint of the Onshore Site to dust effects from construction and demolition, as assessed

in Section 25.2.3.3.1. As no habitats within the vicinity of the Onshore Site were defined as sensitive to effects by dust soiling, the risk is Negligible, and any effects will be Not Significant.

Table 25-21 Sensitivity of the Area to Ecological Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

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

As identified in Section 25.2.3.3 above, the Onshore Site is classified as 'Large for Earthworks, Small for Construction activities and Medium for Trackout. Therefore, when combined with the sensitivity of the area, using Tables 25-20 and 25-21 above as guidance, the pre-mitigation risk of impacts from the Onshore Site is summarised in Table 25-22 below.

Table 25-22 Summary Dust Risk Table for Onshore Site Construction Activities – Defining of the sensitivity of the Area

Potential Impact	Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	N/A	Medium Risk	Low Risk	Low Risk
Human Health	N/A	Low Risk	Low Risk	Negligible Risk
Ecological	N/A	Negligible Risk	Negligible Risk	Negligible Risk

As identified in the above tables, the overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the Construction phase of the Onshore Site is Medium. Receptors which are within a high sensitivity zone are along the "rolling" construction route of the OGC, thus the magnitude of the dust emissions, and the duration of the source of potential dust impacts will be less than what has been assessed. Therefore, the potential effects of dust from the construction phase of the Onshore Site are considered to be equivalent to Temporary to Short-term, Slight, Negative effects that are Not Significant.

It should be noted that the assessment of the potential impact of dust on the ecological receptors included in this assessment (i.e. the Tullaher Lough and Bog SAC and pNHA, the River Shannon SAC and the River Shannon and River Fergus Estuaries SPA) follows the methodology set out in the IAQM 2024 guidance. However, a more detailed ecological impact assessment of these receptors during the construction phase (including effects from dust) is contained in Chapter 20: Terrestrial Biodiversity, of this EIAR.

Transport to and from the Onshore Site

The transport of OCC infrastructure, construction vehicles, aggregate material, waste removal vehicles and construction staff to/from the Onshore Site for the construction of the associated Onshore Site infrastructure will also give rise to some localised dust emissions during periods of dry weather.

The Institute of Air Quality Management Construction Dust Guidance (IAQM 2014) states that the track out (the spreading of dust onto roads from the wheels of vehicles leaving construction sites) related construction dust impact increases with respect to the number of movements of HGVs per day, length of unpaved road, distance to receptors and the sensitivity of local receptors.

The construction phase timeframe for the Onshore Site is 36 months which equates to a max. total of 743 working days. The total additional HGV numbers generated on public roads during the construction phase will be 28 HGVs per day. Please see Chapter 29: Traffic and Transportation for details on traffic volumes. Based on the methodology detailed in Section 25.2.3, this is considered a low level of dust emissions from trackout. Combined with the established sensitivity of the area of as Low (Table 25-18, Table 25-19 and Table 25-20 above), the dust emission magnitude for the transportation of materials to and from the Onshore Site is Low which is assessed as a Short-Term, Slight, Negative effect, which is Not Significant. Mitigation measures to reduce the significance of this effect are presented below.

25.3.2.2.2 Mitigation & Monitoring Measures

- Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along road network to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff.
- All plant and materials vehicles shall be stored in dedicated areas within the Onshore site.
- Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.
- The agreed haul route road adjacent to the Onshore site will be regularly inspected for cleanliness and cleaned as necessary.
- The roads adjacent to the Onshore site entrance will be checked weekly for damage/potholes and repaired as necessary.
- The transportation of construction materials from locally sourced quarries to the Onshore site will be covered by tarpaulin where necessary.
- An Onshore Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 5-16). The Onshore CEMP includes dust suppression measures.

25.3.2.2.3 Residual Impact

With the implementation of the above mitigation measures, the residual effect is considered to be Short-Term, Imperceptible, Negative Effect on air quality brought about by dust emissions generated during the construction activities of the Onshore Site, that is considered Not Significant.

25.3.2.2.4 Significance of Effects

Based on the assessment above, there will be no significant effects on air quality from dust emissions generated by traffic movements during the construction phase of the Onshore Site.

25.3.3 Operation and Maintenance Phase

25.3.3.1 Exhaust Emissions

The operation and maintenance phase of the Onshore Site will generate additional traffic to the area in the form of light goods vehicles (LGVs) visiting the OCC intermittently for inspections but on occasion, Heavy Goods Vehicle (HGVs) may be required over short periods during maintenance/substation component replacement activities. The OCC will be operated and maintained by Eirgrid and ESB. On occasion, hydrocarbons (transformer oil) and waste from welfare facilities will be removed from the OCC by a licenced waste disposal company.

The addition of a LGV to the area of the Onshore Site intermittently during the operational phase will give rise to a long-term imperceptible negative impact on air quality. The addition of several HGVs on occasion over the 38-year lifetime of the Project will give rise to a Long-Term, Imperceptible, Negative Effect on air quality that is Not Significant.

In addition to the above, the Onshore Site will continue its land uses of low-intensity agriculture, transport along public road corridor and recreational amenity. Vehicles, farm machinery and existing traffic flows, as described in Chapter 29: Traffic and Transportation will continue to utilise the site as required.

Mitigation

- Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise.
- When stationary, delivery and on-site vehicles will be required to turn off engines.
- Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements.

Residual Effects

Following implementation of the mitigation measures above, residual effects of exhaust emissions for the operation and maintenance phase of the Onshore Site will have a Long-Term, Imperceptible, Negative Effect, that is Not Significant.

Significance of Effects

Based on the assessment above, there will be no significant effects on air quality due to exhaust emissions during the operation and maintenance phase of the Onshore Site.

25.3.3.2 Dust Emissions

As discussed above in Section 25.3.3.1, the operation and maintenance phase of the Onshore Site will generate additional traffic to the area in the form of LGVs intermittently and on occasion and HGVs for short periods if maintenance is required. This additional traffic may give rise to dust emissions. This will be a Long-Term, Imperceptible, Negative Effect on air quality due to dust emissions, which is Not Significant.

Mitigation Measures

- Maintenance vehicles brought onsite during the operational phase will be maintained in good operational order, thereby minimising any dust emissions that arise.
- Where necessary, waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the emissions associated with vehicle movements.

Residual Effect

Based on the above, the residual effect on air quality from dust emissions during the operation and maintenance phase is a Long-Term, Imperceptible, Negative Effect, that is Not Significant.

Significance of Effects

Based on this assessment above, there will be no significant effects on air quality from dust emissions generated at the Onshore Site during the operation and maintenance phase.

25.3.3.3 Air Quality

Although a Long-Term, Negative, Imperceptible Effect on air quality is expected during the operation and maintenance phase due to exhaust and dust emissions from maintenance vehicles, there will be no net carbon dioxide (CO_2) emissions from the operation of the Project, which the Onshore Site facilitates. The Project, by providing an alternative to electricity derived from coal, oil or gas-fired power stations, will result in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_X), and sulphur dioxide SO_2. The production of renewable energy from the Project will have a Long-Term, Significant Positive Effect on air quality due to the displacement of approximately 17.56 million tonnes of CO_2e emissions over the proposed 38-year operational lifetime of the Project from traditional carbon-based electricity. Please see Chapter 30: Climate for further details on carbon displacement calculations. This effect is considered Significant.

Residual Effect

The overall residual effect will be a Long-Term, Significant, Positive Effect on air quality due to the displacement of approximately 17.56 million tonnes of CO_2e emissions over the proposed 38-year operational lifetime of the Project (see Chapter 30 for details), due to the total MWh generation over the operation and maintenance phase of 76,395,960 MWh (76,395,960,000 kWh). This effect is considered Significant.

Significance of Effects

Based on the assessment above, there will be a significant positive effect on air quality due to the operation of the Onshore Site in conjunction with the Project.

25.3.3.4 Human Health

Whilst the operation and maintenance phase of the Onshore Site will give rise to minor increases in dust and vehicle emissions, the implementation of the mitigation measures discussed above, and good management practices can prevent or minimise potential effects off-site. Good management practice consists of good site design and layout, adopting appropriate working methods, choosing the right equipment and ensuring that the workforce understands the company's responsibilities and is familiar with good working practice and dust suppression techniques. The potential for health effects is considered negligible as the potential for both exhaust and dust emissions will be limited and controlled through site layout design and mitigation measures.

Exposure to chemicals such as SO_2 and NO_X, Pb, benzene and O_3 are known to be harmful to human health. The production of clean renewable energy from the Project, facilitated by the Onshore Site, will offset the emission of these harmful chemicals by fossil fuel-powered sources of electricity and, therefore, will have a Long-Term, Slight, Positive Effect on human health, which is considered Not Significant.

Further information on the impact of the Onshore Site and the Project on Human Health is contained in Chapter 6: Population and Human Health.

Residual Effect

Based on the above, there will be a Long-Term, Slight, Positive Effect on human health due to the operation of the Onshore Site in conjunction with the Project, that is considered Not Significant.

Significance of Effects

Based on the assessment above, no significant effects on human health will occur due to the operation and maintenance phase of the Onshore Site.

25.3.4 Decommissioning Phase

Prior to the commencement of any decommissioning activities, a full risk assessment will be undertaken for all elements of the rehabilitation plan and in line with the agreed rehabilitation schedule. Decommissioning of the Onshore Site infrastructure includes for the decommissioning of the OLL, OGC and the OCC. The buried OEC cables at the Landfall will be cut at the TJB and left in situ, the TJB will remain in situ as this will be buried below ground, and the OGC will be cut within the TJB to allow for the cable to be pulled through.

The joint bays along the OGC route will be opened up and the cables will be cut. Once cut, the cables are pulled through the ducting and removed. The joint bays are then backfilled and reinstated to the relevant road standards, or to original condition for those located on private lands. The ducts and joint bay infrastructure will remain in situ and can be used for future cable burial installation if required. To remove this infrastructure would be more disruptive as it would require digging out the infrastructure but also due to the disruption to traffic in the area.

The above ground components of the OCC building and compound will be removed fully from site. For the underground components, such as the foundations and non-electrical infrastructure, the least disruptive option would be for these to remain in situ.

A Rehabilitation Schedule is included as Appendix 5-18 of this EIAR for the decommissioning and rehabilitation of the Project. Any impact and consequential effects that occur during the decommissioning phase are similar to that which occur during the construction phase, albeit of lesser scale and impact. The mitigation measures prescribed for the construction phase of the Onshore Site will be implemented during the decommissioning phase thereby minimising any potential impacts. The potential for effects during the decommissioning phase of the Project has been fully assessed in this EIAR and Appendix 5-18. The potential for effects occurring during decommissioning of the Onshore Site, while not anticipated, is still assessed as being similar, but to a lesser extent, than those which may occur during the construction phase, and this is considered Not Significant.

25.3.4.1 Exhaust Emissions

Onshore Landfall Location, Onshore Compensation Compound, Temporary Construction Compound, Access Tracks

The decommissioning of the OLL infrastructure, OCC and all ancillary works and apparatus will require the operation of construction vehicles and plant onsite giving rise to exhaust emissions. Decommissioning will take place over a short period, resulting in minor noticeable changes to the character of the environment during this time. Therefore, there will be a Temporary, Slight, Negative Effect on air quality, that is Not Significant.

Onshore Grid Connection

The decommissioning of the OGC requires the operation of construction vehicles and plant onsite, therefore giving rise to exhaust emissions. The OGC cabling will be removed from the underground cable ducting at the end of the useful life of the renewable energy development. The cabling will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at each of the joint bays/pull pits along the OGC. The above-ground infrastructure at the OCC will be removed.

Any impacts will be limited to the active decommissioning areas and will be temporary in nature. Due to the 'rolling' nature of the decommissioning of the OGC, and the fact that there will be minor noticeable changes in the character of the environment over a short time along the period of construction of the OGC, this is a Temporary, Slight, Negative Effect, on air quality due to exhaust emission during decommissioning of the OGC, that is Not Significant.

Transport to and from the Onshore Site

The transport of decommissioned infrastructure, construction vehicles, waste removal vehicles and construction staff to/from the Onshore Site for the decommissioning of the associated Onshore Site infrastructure, (see Chapter 29: Traffic and Transportation of this EIAR), will also give rise to exhaust emissions associated with the transport vehicles. This constitutes a Temporary, Imperceptible, Negative Effect on air quality, that is Not Significant. Mitigation measures in relation to exhaust emissions are presented below.

Mitigation

- All construction vehicles and plant used onsite during the decommissioning phase will be maintained in good operational order. If a vehicle requires repairs this work will be caried out, thereby minimising any emissions that arise.
- All machinery will be switched off when not in use.
- Users of the Onshore Site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum.
- The Materials Recovery Facility (MRF) facility will be as close as possible to the Onshore Site to reduce the level of emissions associated with vehicle movements.

Residual Effects

Following implementation of the mitigation measures above, the residual effects of exhaust emissions for the decommissioning phase of the Onshore Site will have a Temporary, Imperceptible Negative Effect, that is considered Not Significant.

Significance of Effects

Based on the assessment above, there will be no significant effects on air quality due to exhaust emissions during the decommissioning phase of the Onshore Site.

25.3.4.2 Dust Emissions

Section 25.3.2.2 above describes how dust emissions may arise during construction of decommissioning activities.

Onshore Landfall Location, Onshore Compensation Compound and Onshore Grid Connection

The decommissioning of the Onshore Site will potentially give rise to dust emissions. Due to the nature of the proposed decommissioning works at each joint bay along the OGC, as described in Chapter 5 of this EIAR, means that these works will not be concentrated in any one area of the route for any considerable length of time. The decommissioning activities at the OCC will occur over the longest period of time.

There are a number of sensitive receptors within the vicinity of the Onshore Site decommissioning area (at the OGC joint bays and the OCC). Some receptors may experience soiling and deposition of vegetation effects depending on proximity to the decommissioning works. Due to the nature of the decommissioning works proposed, there is potential for less effects on sensitive receptors during the decommissioning phase than that of the construction phase.

- There are 2 no. Sensitive Receptors within 20m of the Onshore Site
- There are 17 no. Sensitive Receptors within 50m of the Onshore Site
- There are 42 no. Sensitive Receptors within 100m of the Onshore Site
- There are 138 no. Sensitive Receptors within 250m of the Onshore Site

where construction activities with the potential to generate dust can occur.

Table 25-23 below identifies the sensitivity of the Area to Dust Soiling Effects on People and Property surrounding the decommissioning footprint of the Onshore Site to dust soiling effects, based on the definitions in Section 25.2.3.3 above. Receptors were classed as high sensitivity receptors due to the fact that they are residential properties. On assessment of receptor sensitivity and the distance of these receptors from the dust source, the overall sensitivity of the area to dust soiling effects is considered to be Medium.

Table 25-23 Sensitivity of the Area to Dust Soiling Effects on People and property from Onshore Site decommissioning works. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024).

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

Table 25-24 below identifies the sensitivity of people in the area surrounding the development footprint of the Onshore Site to the health effects of PM_{10}, as described in Section 25.2.3.3 above. The overall sensitivity of the area to human health effects of PM_{10} is considered to be Low.

Note, the 'Annual Mean PM_{10} Concentration' column in the table is based on the PM_{10} annual mean concentration for the site, which is expected to be similar or lower than that recorded for Zone D as per Table 25-14 above (11.0 µg/m^3), i.e. the Zone D value is used as a proxy for the Onshore Site annual mean PM_{10} concentration.

Table 25-24 Sensitivity of the Area to Human Health Impacts from Onshore Site construction works. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10				
Low	-	≥1	Low	Low	Low	Low

Table 25-25 below identifies the sensitivity of ecological receptors in the area surrounding the development footprint of the Onshore Site to dust effects from construction and demolition, as assessed in Section 25.2.3.3.1. As no habitats within the vicinity of the Onshore Site were defined as sensitive to effects by dust soiling, the risk is Negligible, and any effects will be Not Significant.

Table 25-25 Sensitivity of the Area to Ecological Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

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

As identified in Section 25.2.3.3 above, the Onshore Site is classified as 'Small' for Earthworks, Small for Construction activities and Medium for Trackout. Therefore, when combined with the sensitivity of the area, using Tables 25-24 and 25-25 above as guidance, the pre-mitigation risk of impacts from the decommissioning of the Onshore Site is summarised in Table 25-26 below.

Table 25-26 Summary Dust Risk Table for Onshore Site Construction Activities – Defining of the sensitivity of the Area

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Low Risk	N/A	Low Risk
Human Health	Low Risk	Low Risk	N/A	Low Risk
Ecological	Negligible	Negligible	N/A	Negligible

As identified in the above tables, The overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the decommissioning phase of the Onshore Site is Low. Receptors which are within a high sensitivity zone are along the "rolling" decommissioning route of the joint bay locations along the OGC, thus the magnitude of the dust emissions, and the duration of the source of potential dust impacts will be less than what has been assessed. Therefore, the potential effects of dust from the decommissioning phase of the Onshore Site are considered to be equivalent to Temporary to Short-term, Imperceptible, Negative effects, and any potential effects are considered Not Significant.

It should be noted that, similar to Section 25.3.2.2, the assessment of the potential impact of dust on the ecological receptors included in this assessment follows the methodology set out in the IAQM 2024 guidance, while a more in-depth assessment is contained in Chapter 20: Terrestrial Biodiversity.

Transport to and from Onshore Site

The transport of decommissioned infrastructure, construction vehicles, waste removal vehicles and construction staff to/from the Onshore Site for the decommissioning of the associated Onshore Site infrastructure will also potentially give rise to some localised dust emissions during periods of dry weather.

The Institute of Air Quality Management Construction Dust Guidance (IAQM 2014) states that the track out (the spreading of dust onto roads from the wheels of vehicles leaving construction sites) related decommissioning dust impact increases with respect to the number of movements of HGVs per day, length of unpaved road, distance to receptors and the sensitivity of local receptors.

The removal of the OGC cabling from the OLL to the OCC, and from the OCC to Moneypoint, at the end of the useful life of the renewable energy development will result in traffic generation and the requirement for road closures and diversions similar to, but less than those associated with the construction phase The impacts and associated effects will be materially less than during the construction phase. Similarly, the removal of all OCC buildings and electrical infrastructure above ground level will generate less traffic than is estimated during the construction phase.

While the actual number of loads that will require to be removed for the removal of these cables and the OCC has not been determined at this stage, the impact in terms of traffic volumes and duration of the traffic diversions will be significantly less than during the construction stage. Further information on decommissioning can be found in the Rehabilitation Schedule (included as Appendix 5-18 of this EIAR).

Based on the methodology detailed in Section 25.2.3, the dust emission magnitude for the transportation of materials to and from the Onshore Site is Low which is assessed as a Temporary, Imperceptible, Negative Effect, that is Not Significant. Mitigation measures are presented below.

25.3.4.2.2 Mitigation & Monitoring Measures

- Sporadic wetting of any loose stone surface will be carried out during the decommissioning phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along road network to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff.
- All plant and materials vehicles shall be stored in dedicated areas within the site.
- The agreed haul route road adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary.

25.3.4.2.3 Residual Impact

With the implementation of the above mitigation measures, it is considered to be a Temporary, Imperceptible Negative Effect on air quality brought about by dust emissions generated during the decommissioning activities of the Onshore Site, that is considered Not Significant.

25.3.4.2.4 Significance of Effects

Based on the assessment above, there will be no significant effects on air quality from dust emissions generated by traffic movements during the decommissioning phase of the Onshore Site.

25.3.5 Cumulative Assessment

Potential cumulative effects on air quality between the Onshore Site as part of the Project and other plans and projects in the vicinity, as set out in Section 4.3.1 of Chapter 4: EIAR Methodology, of this EIAR, were also considered as part of this assessment. The developments considered as part of this cumulative effect assessment are presented in Appendix 4-2 of this EIAR, with relevant developments within 500m of the OGC presented below in Table 25-27 Given dust particles do not generally travel greater than 500m from source the geographical boundary for the cumulative dust impact is 500m. This is in line with the Guidance on the Assessment of Mineral Dust Impacts for Planning, IAQM 2016. The cumulative project list was prepared following a review of planning files (An Bord Pleanála and Local Authority files), EPA search engines, development plans and National Roads Office/Transport Infrastructure Ireland road projects.

The nature of the Onshore Site is such that, once operational, by facilitating the Offshore Site of the Project it will have a Long-Term, Significant, Positive Effect on air quality.

During the construction phase of the Onshore Site and other developments as described in Chapter 2 of this EIAR, that are yet to be constructed, there will be minor emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals, as outlined in Section 25.3.2 are implemented, the Onshore Site will not result in any significant residual effects on air and climate and will not contribute to any cumulative effect when considered in combination with other plans and projects.

There will be no net carbon dioxide (CO_2) emissions from operation of the Onshore Site. Exhaust emissions of carbon dioxide (CO_2), oxides of nitrogen (NO_X), sulphur dioxide (SO_2) or dust emissions during the operation and maintenance phase of the Onshore Site will be minimal, relating to the use of operation and maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality and climate. This effect is Not Significant.

Table 25-27 Other Plans and Projects with the potential to cause cumulative effects on air quality alone and in combination with the Proposed Project

Planning Ref.	Description	Decision
ABP. Ref. 307798	Proposed 400kV electricity transmission cables, extension to the existing Kilpaddoge Electrical Substation and associated works, between the existing Moneypoint 400kV Electrical Substation in the townland of Carrowdoita South County Clare and existing Kilpaddoge 220/110kV Electrical Substation in the townland of Kilpaddoge County Kerry. The development includes work in the foreshore.	Conditional Permission
ABP. Ref. 319080-24	Proposed transition and conversion of the existing 900MW electricity generating station from coal to heavy fuel oil and associated ancillary development at Moneypoint Generating Station, Moneypoint, Co. Clare.	Conditional Permission
CCC. Ref. 19746	for development on a c. 1.8 ha site located within Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref.P0605-04) and Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015. The	Conditional Permission

	development, which will be located within a fenced compound c. 0.94 ha. will consist of a 300 to 400 MVA (electrical rating) synchronous condenser, including the following elements: a) a Generator and Flywheel building (c. 962 sq.m., c. 15m high) to house equipment including the generator, flywheel, lube oil skid, air compressor and pumps; b) supporting items of plant located within the compound including *cooling equipment (c. 690 sq.m., c. 3m high); *c. 7m high modular containers to house electrical and control equipment (total area of c. 384sq.m); *a generator step-up transformer (c.150 sq.m c. 8m high), auxilary transformer (c. 48 sq.m., 7m high) and electrical plant including an external circuit breaker (c 66 sq.m., c. 9m high); *fire fighting water tank (c. 7m dia., c. 8m high, pump house (c. 21 sq.m., c. 3m high); and * an above-ground oil separator and collection pit (c. 72sq.m.) connections to existing site services networks including electrical, water and wastewater and an underground surface water attenuation tank connecting to existing surface water drains; c) all other ancillary and miscellaneous site works including site clearance; site access, internal roads and development of areas of hard standing including a maintenance lay-down area; and d) the development will be bounded by a c. 3m high chainlink fence. Site access will be by means of a new c. 2.7 m high palisade gate accessed from existing roads within the station site. Planning Permission is being sought for a duration of 10 years.	
CCC. Ref. 20275	for the Construction of a single storey extension to existing dwelling to include front porch, Living area, Dining area, T.V Room, Play room and for internal and elevational changes to existing dwelling. Also PERMISSION is sought for the demolition of existing conservatory to side of dwelling and demolition of detached garage, including ancillary site works	Conditional Permission
CCC. Ref. 20551	the development will consist of construction of an agricultural shed, with underground slatted slurry storage tanks in place of existing open slurry tank and all associated site works	Conditional Permission
CCC. Ref. 20661	for development comprising (a) demolition of (i) single storey porch to front, (ii) single storey extension to rear, (iii) 2 no. gables to front, (iv) existing roof structure and 2 no. chimneys, (b) lowering of existing window head and cill to front elevation , creation of new sliding door open to side (north-east) elevation and creation of new window open to rear elevation, (c) construction of (i) new first floor extension over entire existing ground floor, (ii) storey and a half extension to front and (iii) storey and a half extension to rear, (d) construction of new pitched roof structure over entire comprising new gables to all (front, side and rear) elevations, raising of existing ridge height, 5 no. velux to front and 3 no. velux to side (north-east), (e) new on-site waste water treatment system with soil polishing filter and (f) all ancillary site works	Conditional Permission
CCC. Ref. 21638	to demolish existing substandard derelict cottage and sheds and to construct a replacement dwelling house, site entrance, private garage and on-site waste water treatment system along with all associated site works	Conditional Permission

CCC. Ref. 21947	for development at a c.0.015ha site in the car park of Tesco, Ennis Road, Kilrush, Co Clare. The development will consist of; (i) the construction of a sheltered canopy (c. 50 sq.m) in the existing car park for the purpose of providing 2 no. dedicated "Click and Collect" spaces for the existing Tesco store; and (ii) ancillary signage, a pedestrian crossing and all associated site development works	Conditional Permission
CCC. Ref. 211095	to demolish existing derelict former dwelling and to construct a single dwelling house, waste-water treatment system along with ancillary site works	Conditional Permission
CCC. Ref. 211174	to construct new dwelling including garage, proposed site entrance, proposed treatment unit and percolation area, including all ancillary site works	Conditional Permission
CCC. Ref. 211241	of the development at a c.0.012 ha site in the car park of Tesco, Ennis Road, Kilrush, Co. Clare. The development consists of RETENTION permission for "Click and Collect" signage in the existing Tesco car park	Conditional Permission
CCC. Ref. 22255	of the change of design of a dwelling house and garage previously granted under C/603 granted by Kilrush Urban District council, along with all associated works	Conditional Permission
CCC. Ref. 22553	to construct new bay window and porch to front elevation	Conditional Permission
CCC. Ref. 2332	for development within the Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref P0605-04) and and Upper tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015. The development, which will be located at various locations within the station complex, will consist of land-based site investigation (SI) works comprising of boreholes and trial pits across the site	Conditional Permission

25.3.5.1 Construction Phase

Air Quality

During the construction phase of the Onshore Site, and other permitted or proposed projects and plans in the area, there will be minor emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals, as outlined in Section 25.3 are implemented during the construction phase of the Onshore Site, there will be no significant cumulative negative effect on air quality.

- As established above in Section 25.X, there are short-term, imperceptible to slight negative effects on air quality during the construction phase of the Onshore Site from: Exhaust emissions during the construction of the Onshore Site, including the OLL

infrastructure (transition joint bay), temporary construction compounds, new access tracks, the OGC (including joint bays), the OCC, and all other ancillary infrastructure;
- Exhaust emissions through vehicle transport of workers and materials to and from the Onshore Site;
- Dust emissions during the construction of the Onshore Site, including the OLL infrastructure (transition joint bay), temporary construction compounds, new access tracks, the OGC (including joint bays), the OCC, and all other ancillary infrastructure;
- Dust emissions produced through vehicle transit of workers and materials to and from the Onshore Site.

Once the mitigation proposals, as outlined in the above assessment in Section 25.3.2 are implemented during the construction phase of the Onshore Site as part of the Project, there will be no cumulative negative effect on air quality owing to the Onshore Site. Therefore, it is considered there will be No Significant Cumulative Effects on air quality, should other proposed or consented plans and projects within the surrounding landscape be constructed in parallel with the Onshore Site.

25.3.5.2 Operation and Maintenance Phase

There will be no net carbon dioxide (CO_2) emissions from operation of the Onshore Site as part of the Project. Exhaust emissions of carbon dioxide (CO_2), oxides of nitrogen (NO_X), sulphur dioxide (SO_2) or dust emissions during the operation and maintenance phase of the Onshore Site will be minimal, relating to the use of operation and maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality

As established in Section 25.3.3, there will be a Long-Term, Imperceptible Effect on air quality from:

- Exhaust emissions from maintenance LGVs visiting the OCC on average once per day
- Dust emissions from LGV vehicles visiting the site on average once per day and on occasion more frequent LGV and HGV visits during component or OCC infrastructure replacement.

Conversely, as established in Section 25.3.3.3 above, there will be an overall Long-Term, Significant, Positive effect on Air Quality from:

- The provision of an alternative to electricity derived from coal, oil or gas-fired power stations. The Project will result in emission savings of CO_2, NO_X, and SO_2. The production of renewable energy from the Project will have a long-term significant positive impact on air quality due to the 17.56 million tonnes of CO_2e emissions over the proposed 38-year operational lifetime of the Project. Please see Chapter 30: Climate for further details on carbon displacement calculations.

Therefore, it is considered there will be no measurable negative cumulative effects on air quality should other proposed or consented plans and projects within the surrounding landscape be operational in parallel with the Onshore Site as part of the Project. However, once the Project is operational, there will be a Long-Term, Moderate, Positive cumulative effect on air quality, that is considered Significant.

25.3.5.3 Decommissioning Phase

As outlined in Section 25.3.4, decommissioning of the Onshore Site infrastructure includes for the decommissioning of the OLL, OGC and the OCC.

Potential of effects on air quality are not anticipated during decommissioning of the Onshore Site, and the activities associated with decommissioning are detailed in Chapter 5: Project Description and in Appendix 5-18: Rehabilitation Schedule.

Any cumulative impact and consequential effects that occurs during the potential decommissioning phase of the Onshore Site are similar to that which occur during the construction phase, albeit of lesser impact. The mitigation measures prescribed for the construction phase of the Onshore Site will be implemented during the decommissioning phase thereby minimising any potential cumulative effects. This effect is considered Not Significant.

25.4 Conclusion

Following consideration of the residual effects (post-mitigation), it is determined that the Onshore Site will not result in any significant effects on air quality in the area surrounding the Onshore Site. Provided that the Onshore Site is constructed, operated and decommissioned in accordance with the design, best practice and mitigation that is described within this application, significant negative effects on air quality through effects on exhaust and dust emissions are not anticipated at international, national, or county scale.