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LONGFORDPASS, LITTLETON, LANESPARK AND DERRYVELLA BOGS – APPLICATION FOR SUBSTITUTE CONSENT

Remedial Environmental Impact Assessment Report

Chapter 9 – Air Quality

Prepared for:
Bord na Móna Energy Ltd

BnM

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9. AIR QUALITY

9.1 Introduction

This chapter presents an assessment of air quality impacts resulting from Bord na Móna Energy Ltd (hereafter referred to as Bord na Móna) peat extraction and ancillary activities at the Application Site. The assessment covers three distinct phases: the Peat Extraction Phase (1988–2017), the Current Phase (2017 to present), and the Remedial Phase.

The baseline air quality has been established using published data from the Environmental Protection Agency (EPA). Although site activities have taken place over several decades, beginning in 1988, the assessment evaluates potential impacts against the most recent air quality standards, which are likely more stringent than those in place during earlier years. Therefore, if no significant effects are identified under current standards, it is reasonable to conclude that significant impacts were unlikely under historical standards.

The assessment of historical impacts focuses on the period from 1988, coinciding with the introduction of the EU Environmental Impact Assessment (EIA) Directive, up to 2017, when peat extraction ceased. The primary air quality concerns during this phase include the generation of atmospheric dust from peat extraction and vehicle exhaust emissions.

A detailed description of the project is provided in Chapter 4 - Description of the Development, Volume 2.

9.1.1 Statement of Authority

This chapter has been prepared by Brian Cronin, a Senior Environmental Scientist with a BSc in Environmental Science from University College Cork and an MSc in Environmental Engineering from Trinity College Dublin. He is member of the Institution of Engineers of Ireland (MIEI). Brian has ten years of postgraduate experience, working in contaminated land and remediation consulting, and in Environmental Impact Assessment. He has experience working on various renewable energy projects preparing chapters of the EIAR for wind farms, specialising in various disciplines including air quality, climate, hydrology and water quality.

This chapter has been reviewed by Jim Hughes. Jim has over 20 years experience in planning and environmental consultancies and in managing the preparation of Environmental Impact Assessment for large infrastructure projects including linear infrastructure, large scale commercial developments and renewable energy projects. Jim holds a BA in Public Administration and Development, MSc in Town Planning and a HDip in SEA and EIA Management.

9.1.2 Limitations and Difficulties

Air quality data pertaining to the baseline year of 1988 was not available. Air quality data from the EPA is available as far back as 2006. Data for the period 2006-2025 was used to characterise the background air quality in the vicinity of the Application Site.

Historical traffic data for 1988 when the EIA Directive was required to be transposed in Irish law, is not available. Due to the absence of precise historical traffic data, traffic count data from a survey by Traffinomics Ltd., conducted in 2023, together with census data from 2022, was used to estimate traffic volumes in 1988 based on census data from 1986 and 1991 (please see Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2, for more details on the methodology of estimating traffic volumes).

9.2 Methodology

9.2.1 EPA Description of Effects

The significance of effects of peat extraction and ancillary activities shall be described in accordance with the EPA guidance document Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR), May 2022. Details of the methodology for describing the significance of the effects are provided in Chapter 2 – Background, Volume 2.

The rating of potential environmental effects of the peat extraction and ancillary activities undertaken at the Application Site on air quality is based on the criteria presented in Table 3.4 of the EPA (2022) document titled *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*. These criteria consider the quality, significance, duration and types of effects to be identified.

9.2.2 Assessment Criteria

9.2.2.1 IPC Licence Criteria

There are no statutory limits for dust deposition in Ireland; instead, the emphasis is on preventing nuisance and minimizing airborne dust emissions where feasible. While coarse dust is not considered a health hazard, it can create a nuisance by depositing on surfaces. Condition 5 of the Integrated Pollution Control Licence Reg. No. P0499-01 issued to Bord na Móna Fuels Limited in August 2001 is specific to Emissions to Atmosphere, including dust emissions. The following conditions apply:

5.1 No specified emission to the atmosphere shall exceed the emission limit value set out in Schedule 1(i) Emissions to Atmosphere, subject to Condition 3 of this licence. There shall be no other emission to the atmosphere of environmental significance.
5.2 The licensee shall within eighteen months of the date of grant of licence, conduct a feasibility study to investigate the reduction of particulate emissions from stacks A103, A104 and B101. This study shall include an environmental cost-benefit analysis, which shall quantify the optimum reduction for each stack, and propose a timeframe for implementation of the required measures.
5.3 Combustion Efficiency of boiler AB1 (Templetuohy works) shall be tested annually and results reported on annually as part of the AER.
5.4 The licensee shall ensure that all operations on-site shall be carried out in a manner such that air emissions and/or dust do not result in significant impairment of, or significant interference with amenities or the environment beyond the site boundary.
5.5 Within six months of the date of grant of the licence, the licensee shall submit to the Agency for agreement, a proposal for:

- The identification and monitoring of Dust Sensitive Locations (DSL's) on and off site for dust deposition. A report on this monitoring shall be submitted annually as part of the AER.
- Maintenance of the cyclones and grit arrestors.

5.6 Activities on-site shall not give rise to dust levels off site at any Dust Sensitive Location which exceed 350 mg/m2 /day. [The sampling method to be in accordance with German TA Luft Emission Standards for Particle Deposition (IW1)]
5.7 In relation to Dust Control the licensee shall, within twelve months of the date of grant of this licence, develop, for implementation, procedures to ensure that:

- shelter belts are planted in sensitive areas,
- harvesting in sensitive areas is avoided during windy weather,
- where possible machinery use grassed pathways,
- stockpiles are sheeted where possible,
- moving machinery maintains slow speeds when travelling along dusty headlands,
- when harvesting, the jib is maintained low to the stockpile,
- shelter belts are planted around outloading facilities,
- road transported peat is adequately covered (sheeted or similar),
- wind breaks are planted wherever appropriate.

5.8 Monitoring and analyses of each emission shall be carried out as specified in Schedule 1(ii) Monitoring of Emissions to Atmosphere of this licence. A report on the results of this monitoring shall be submitted to the Agency on a quarterly basis.

5.9 The licensee shall not operate the briquette manufacturing plant during the last two weeks of May, and the months of June, July, and August, unless it can demonstrate by appropriate use of air dispersion modelling, or the fitting of abatement, that operation of the plant during these times will not result in any breach of Air Quality Standards.

The dust emission limit value of 350 mg/m^2/day is applicable to the Peat Extraction Phase, the Current Phase, and the Remedial Phase of this assessment.

9.2.2.2 Air Quality Standards

In addition to the licensed conditions relating to dust emissions and deposition, other pollutants such as nitrogen dioxide (NO_2), particulate matter less than 10 microns (PM_{10}), and particulate matter less than 2.5 microns ($PM_{2.5}$) also have the potential to affect air quality at sensitive locations. These impacts may arise during the Peat Extraction Phase, the Current Phase and the Remedial Phase. Although concerns about air quality date back to the 1970s, it was not until the 1980s that directives were introduced to address potential risks. The first edition of the World Health Organization's Air Quality Guidelines for Europe was published in 1987.

In 1996, the Air Quality Framework Directive (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. 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);
- The 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); and,

- The fourth Daughter Directive, 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).

The Air Quality Framework Directive and the first three Daughter Directives have been replaced by the Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC on ambient air quality), which encompasses the following elements:

- The merging of 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 micrometers (µm) referred to as $PM_{2.5}$ including the limit value and exposure concentration reduction target;
- The possibility to discount natural sources of pollution when assessing compliance against limit values; and,
- The possibility for time extensions of three years for particulate matter less than 10µm (PM_{10}) or up to five years (nitrogen dioxide, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

The CAFE Directive is transposed into Irish legislation by the Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022). These regulations supersede the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), which previously 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 2022 set similar or more conservative limit values in relation to the air pollutants outlined in previous legislation and also set limit values in relation to $PM_{2.5}$, which had not been addressed in previous legislation.

The EU formally adopted Directive (EU) 2024/2881 of the European Parliament and of the Council on 23rd October 2024 on ambient air quality and cleaner air for Europe. This Directive supersedes the CAFE Directive and sets out new air quality standards for pollutants to be reached by 2030 which are more closely aligned with the World Health Organisation (WHO) 2021 air quality guidelines, which historically had been more conservative than the threshold levels set out in EU legislation.

The Air Quality Standards Regulations 2022 (S.I. 739 of 2022) transposed the CAFE Directive. However, with the adoption of Directive (EU) 2024/2881, Ireland must now transpose this new Directive into national law (i.e. update the Air Quality Standards Regulations) before December 2026.

This assessment uses the ambient air quality standards for PM_{10} and $PM_{2.5}$ set out in the CAFE Directive (see Table 9-1) to evaluate the impact of the Peat Extraction Phase and the Current Phase on air quality. These standards are more stringent than previous limits, ensuring a conservative approach to the assessment. The ambient air quality limit values set out under Directive (EU) 2024/2881 (see Table 9-1) have been used to assess the potential impact to air quality from the Remedial Phase as these limits are applicable from 2030.

Air quality impacts are assessed at sensitive receptors off site. Sensitive receptors for the purposes of this assessment are any occupied dwelling house, hostel, health building or place of worship and may include areas of particular scenic quality or special recreational amenity importance. Areas of ecological importance where designated species may be adversely impacted by dust soiling are also considered sensitive locations.

Table 9-1: Ambient Air Quality Limit Values

Pollutant	CAFE - Limit type	CAFE - Limit value	2024/2881 - Limit type	2024/2881 - Limit value
NO_2	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m^3
NO_2	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m^3
NO_2	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
PM_{10}	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m^3
PM_{10}	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
$PM_{2.5}$	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m^3
$PM_{2.5}$	Annual limit for protection of human health	25 µg/m^3	Annual limit for protection of human health	10 µg/m^3

9.2.3 Desktop Review

The following sources of information were consulted as part of a desktop review in order to establish the baseline environment in 1988 and to inform the air quality impact assessment:

- EPA IPC/IE Licence Register - Littleton Bog Group IPC Licence P0499-01 (https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=P0499-01, Accessed 21/10/2025)
- EPA annual air quality monitoring reports, 2006 – 2023 (https://eparesearch.epa.ie/safer/, Accessed 21/10/2025)
- EPA air quality data post 2023 is available at https://airquality.ie/, Accessed 29/10/2025
- Met Eireann Historical 30-Year Average Meteorological Data for Mullingar Station (1978 – 2008) (https://www.met.ie/climate-ireland/1981-2010/mullingar.html, Accessed 21/10/2025)

- National Parks & Wildlife Services Mapper – Protected Sites Map Viewer (https://dahg.maps.arcgis.com/apps/webappviewer/, Accessed 21/10/2025)

As mentioned in Section 9.1.2, air quality data for the baseline year of 1988 are not available.

9.2.4 Field Survey

No air quality field surveys have been completed to inform the preparation of this chapter.

9.2.5 Consultation

As part of the assessment, consultations were conducted with various organisations, including the Department of Housing, Local Government and Heritage; the Department of Climate, Energy and the Environment; the Environmental Protection Agency, Transport Infrastructure Ireland; and Tipperary County Council amongst others. Correspondence related to these consultations can be found in Table 2-6 of Chapter 2 - Background, Volume 2 in this rEIAR. No specific consultation with regard to air quality was conducted.

9.2.6 Study Area

According to IAQM Guidance on the Assessment of Dust from Demolition and Construction V2.2 (2024), dust from site activities can affect people and property up to 250 m from the source. The guidance also notes that dust may impact vegetation up to 50 m from the site and site access roads, and up to 250 m from the site entrance. Based on this, the study area for assessing potential dust impacts extends 250 m beyond the boundary of the Application Site (see Figure 9-1, Volume 4).

According to the TII guidance document PE-ENV-01106 (TII, 2022), a detailed air quality assessment is required when sensitive receptors—either human or ecological—are located within 200 m of affected road links. However, as outlined in Section 9.2.7.1, this assessment has screened out the need for a detailed evaluation of traffic-related air emissions, as the traffic changes fall below the threshold that would trigger such an assessment.

For the purposes of this assessment, high sensitivity receptors to dust (in terms of soiling or health impacts) include:

- Residential properties where people spend most of their time;
- Schools;
- Hospitals; and
- Residential care homes.

Medium sensitivity receptors include commercial properties and workplaces, while low sensitivity receptors are locations where people are present only briefly or where a high level of amenity is not expected.

In terms of ecological impacts, high sensitivity receptors include:

- Designated conservation areas (Irish or European designation); and
- Locations with dust-sensitive species.

Figure 9-1, Volume 4, of this rEIAR, identifies both human and ecological sensitive receptors located within 250 m of the Application Site boundary.

9.2.7 Impact Assessment Methodology

9.2.7.1 Vehicle Emissions

Emissions from cars, heavy goods vehicles (HGVs)—including tractors and excavators—and railway movements associated with site operations have the potential to affect local air quality.

To determine whether a detailed air quality assessment is required, the scoping criteria outlined in Transport Infrastructure Ireland's (TII) Air Quality Assessment of Specified Infrastructure Projects (PE-ENV-01106, TII, 2022) can be applied. Although this guidance is specifically designed for TII road and infrastructure projects, it is considered best practice and can be used for any development that results in traffic changes.

According to the guidance, a detailed air quality assessment is necessary when sensitive receptors are located within 200 m of affected road links. Road links beyond 200m are not expected to influence pollutant concentrations at receptor locations.

The guidance states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment:

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

This air quality assessment has been informed by the material presented in Chapter 13 - Material Assets (including Traffic & Transportation), Volume 2.

During the Peat Extraction Phase, from July 1988 to 2017 it is noted that all peat removed from the bogs within the Application Site was transported via dedicated, private, internal rail lines to the Littleton Briquette Factory. Therefore, Chapter 13 - Material Assets (including Traffic & Transportation), Volume 2, states that an assessment of the impact of HGV movements from the Peat Extraction Phase was not required as there was no impact on the local road network from the transport of peat.

The impact of staff vehicles on the local road network was assessed within Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2 of this rEIAR. Traffic count data from a survey by Traffinomics Ltd. was used to inform this chapter. The data was collected by Traffinomics Ltd. during traffic surveys conducted for 7 days between the 27th of September - 4th of October 2023. The traffic flows from the 2023 traffic count survey were used as a baseline for the Current and Remedial Phase. For the Peat Extraction Phase, an estimate of 1988 traffic volumes were made by assessing population growth and car ownership rates in County Tipperary.

During the Peat Extraction Phase, it has been estimated in Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2 of this rEIAR that average daily staff trips to and from the Application Site would have accounted for less than 5.2% of the total ADT on the local road network, as outlined in Section 13.2.4. Therefore, it is predicted that the increase in traffic on the local road network due to staff accessing the Application Site is less than the above TII screening criteria for an air quality assessment. This is explained in further detail in Section 9.4.2.1.

Traffic volumes during the Current Phase and Remedial Phase will generally be significantly lower than those experienced during the Peat Extraction Phase. These reduced movements are expected to have an imperceptible impact on local traffic volumes. However, in addition to traffic generated by worker commuting, traffic was generated during the Current Phase by the removal of peat stockpiles using HGVs in 2018 and 2019, as described in Chapter 13 - Material Assets (including traffic and transportation, Volume 2, of this rEIAR. Following the cessation of peat extraction, the remaining stockpiles of peat were removed with a combination of rail and HGV movements, due to the closure of the Littleton Briquette Factory in 2018 the remaining stockpiles had to be transported to alternative destinations by HGV.

During and following the Remedial Phase, traffic will be minimal, with only a small number of permanent staff on site and occasional visits from specialists. As a result, and in line with the screening criteria outlined above, it is unlikely that any road link would be classified as “affected” for the purposes of air quality assessment.

An assessment of the annual average traffic movements on traffic and transportation during the Peat Extraction Phase, Current Phase and Remedial Phase can be found in Chapter 13 - Material Assets (including Traffic & Transportation), Volume 2.

As the changes in traffic volumes during the Peat Extraction Phase, Current Phase and Remedial Phase fall below the screening thresholds set out in TII PE-ENV-01106 (TII, 2022), a detailed air quality assessment of traffic emissions is not required for the Application Site, and no significant impacts are anticipated.

9.2.7.2 Dust Emissions

Across the Peat Extraction Phase, Current Phase, and Remedial Phase at the Application Site, the most significant potential impact on air quality arises from dust emissions.

Large dust particles (greater than 75 µm) settle quickly out of the air and are typically deposited close to the source. In contrast, smaller particles (less than 75 µm) can remain airborne over longer distances and may cause dust nuisance at sensitive receptor locations. This particle size can broadly be described as silt.

To assess the potential impact of dust emissions, the methodology outlined in the Institute of Air Quality Management (IAQM) guidance document Guidance on the Assessment of Dust from Demolition and Construction (2024) has been applied. This approach evaluates the risk of dust impacts based on the scale and nature of the activities and the sensitivity of the surrounding area. Although originally developed for construction activities, this methodology has been in use since 1988 and is recommended by TII in their air quality guidance document PE-ENV-01106 (TII, 2022) as best practice.

The IAQM guidance categorises dust-generating activities into four types:

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

Each category is assessed as having a Large, Medium, or Small magnitude depending on the nature of the activity. This magnitude is then combined with the sensitivity of the surrounding area to determine the overall risk of dust impacts.

For the Application Site, the categories of demolition, construction, and trackout are not applicable. However, the earthworks category is relevant to historic peat extraction activities, as these operations are similar in nature to excavation and earth-moving activities typically found on construction sites.

9.3 Establishment of Baseline (July 1988)

For the purposes of this assessment, July 1988 has been established as the baseline environment. Historical air quality data from this period were reviewed to inform the baseline. However, complete datasets for all sources from this exact timeframe were not available. Where necessary, the earliest available data have been used to support the baseline determination.

9.3.1 Review of EPA Air Quality Monitoring Data

Air quality monitoring has historically been carried out by the EPA and Local Authorities. The EPA website provides comprehensive information on the scope of monitoring across Ireland, including access to monitoring data and results from previous assessments (EPA, 2024). Published data are available for the period 2006–2025; no data prior to 2006 are publicly accessible. Therefore, data from 2006 to 2025 have been reviewed to assess air quality in the region of the Application Site. It should be noted that data from January to December 2020 have been excluded from the baseline assessment, as background concentrations recorded during this period are not considered representative due to the impact of Covid-19 restrictions.

Under the implementation of the Framework Directive on Air Quality (1996/62/EC), Ireland is divided into four air quality zones for monitoring and assessment purposes:

- Zone A: Dublin;
- Zone B: Cork;
- Zone C: 23 towns with populations over 15,000; and
- Zone D: The remainder of the country, including rural areas and towns with populations under 15,000.

The Application Site falls within Zone D, as defined by the EPA (2025). To establish background concentrations of key pollutants—NO_2, PM_{10}, and $PM_{2.5}$—long-term monitoring data from representative rural Zone D locations have been reviewed. These background concentrations reflect non-traffic-related emissions, such as those from natural sources, industry, and domestic heating.

Although there are monitoring stations closer to the Application Site, they were not considered representative due to being located in different air quality zone; or did not have sufficient historical data collected. Rural Zone D sites were deemed the most appropriate reference points given the predominantly rural setting of the Application Site.

Long-term NO_2 monitoring has been carried out at the rural Zone D locations of Kilkitt Co. Monaghan and Emo, Co. Laois with data available for the period 2006 – 2025. Data from 2006 – 2025 has been reviewed in the absence of older historic data. Over the period 2006 – 2025 annual mean concentrations of NO_2 at the rural background stations of Kilkitt and Emo ranged from a maximum of 6 µg/m^3 to a low of 2 µg/m^3 (see Table 9-2) (EPA, 2024 and EPA, 2025). The average annual mean concentration for the 2006 – 2025 period is 3.1 µg/m^3 which is significantly below the annual limit value of 40 µg/m^3.

Exceedances of the 1-hour limit value of 200 µg/m^3 has only occurred at the Emo station in county Laois in 2024 and 2025. In accordance with the Air Quality Standards (S.I. 739 of 2022), as outlined in Table 9-1 above, 18 exceedances are allowed per year, with only 3 occurring in 2024 but 23 occurring in 2025. Therefore, 2025 was non-compliant with this particular criterion for NO_2 at the Emo station. However, the non-compliance appears to be associated with a detection event on 17th March 2025 when NO_2 levels peaked over the course of the day. This indicates that a one-off NO_2-emitting event occurred on that date, and is not representative of baseline conditions. No exceedance was recorded at the Kilkitt station for any year.

Based on the above information a conservative annual mean baseline concentration for $NO_2$of 6 µg/m^3 has been used in this assessment.

Long-term PM_{10} monitoring has been carried out at the rural Zone D location of Kilkitt Co. Monaghan with data available for the period 2006 – 2023. Over the period 2006 – 2023 annual mean concentrations of PM_{10} ranged from a maximum of 11 µg/m^3 in 2013 to a low of 7 µg/m^3 in 2019 and 2023 (see Table 9-3) (EPA, 2024). The average annual mean concentration for 2019 – 2023 period is 8.7 µg/m^3 which is significantly below the annual limit value of 40 µg/m3. In addition, there were few exceedances of the daily limit value of 50 µg/m^3 (35 exceedances are allowed per year in accordance with AQS). Based on the above information a conservative annual mean baseline concentration of 11 µg/m^3 has been used in this assessment.

Monitoring of $PM_{2.5}$ is undertaken at the rural Zone D location of Claremorris Co. Mayo. Data is available for the period 2011 – 2025 on the EPA website (EPA, 2024 and EPA, 2025). Annual mean concentrations of $PM_{2.5}$ ranged from 4 - 8 µg/m^3 over the period 2011 – 2025 which are significantly below the annual mean limit value of 25 µg/m^3 (see Table 9-4). Based on this information, a conservative annual mean baseline $PM_{2.5}$ concentration of 8 µg/m^3 was used in this assessment.

While specific pollutant concentrations prior to 2006 are not available it can generally be assumed that historical air quality dating back to 1988 was of a lesser quality than in more recent years. The EPA state that air quality is improving over time (EPA, 2024) as a result of the introduction of various policies and measures particularly in relation to road transport emissions and the use of cleaner fuels and the gradual introduction of hybrid and electric vehicles.

Table 9-2: Trends in Zone D Air Quality - NO2

Station	Averaging Period	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Kilkitt, Co. Monaghan	Annual mean NO2 ($\mu g/m^3$)	6	2	4	3	3	3	4	4	3	2	3	2	3	5	2	2	2	2	2	2
	Max 1-hr NO2 ($\mu g/m^3$)	110	83	108	50	32	65	42	72	38	97	80	25	37	59	18	15	19	17	22	35
	99.8 1-hr NO2 ($\mu g/m^3$)	54	63	47	23	25	51	29	46	27	-	26	17	22	42	13	11	15	-	-	-
Emo, Co. Laois	Annual mean NO2 ($\mu g/m^3$)	-	-	-	-	-	-	-	4	3	3	4	3	3	4	3	4	3	2	3	4
	Max 1-hr NO2 ($\mu g/m^3$)	-	-	-	-	-	-	-	38	31	34	194	33	91	56	179	64	179	55	270	328
	99.8 1-hr NO2 ($\mu g/m^3$)	-	-	-	-	-	-	-	27	25	-	36	28	42	28	38	47	38	-	-	-

Table 9-3: Trends in Zone D Air Quality - PM10

Station	Averaging Period	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Kilkitt, Co. Monaghan	Annual mean PM_{10} ($\mu g/m^3$)	10	10	10	8	10	9	9	11	9	9	8	8	9	7	8	8	9	7
	24-hr mean > 50 $\mu g/m^3$	0	2	1	1	0	1	1	3	2	1	0	0	0	1	0	0	0	0
	90th %ile of 24-hr means ($\mu g/m^3$)	22	21	21	14	19	18	16	19	15	18	15	14	15	13	14	13	14	-

Table 9-4: Trends in Zone D Air Quality - PM2.5

Station	Averaging Period	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Claremorris, Co. Mayo	Annual mean $PM_{2.5}$ ($\mu g/m^3$)	6	6	8	5	6	6	6	6	4	5	8	6	5	5	6

9.3.2 Dust Deposition Monitoring

Monitoring for dust deposition has been undertaken on site in the past as a requirement of the IPC Licence (EPA Ref. P0499-01) for the Littleton Bog Group which comprises of fourteen bogs, (Appendix 4.1, Volume 3). The monitoring results are reported in the Annual Environmental Report (AER) each year (Appendix 4.3, Volume 3). Monitoring was conducted at 4 no. locations surrounding the Application Site: DSL 1, DSL 2, DSL 3 and DSL 4. The dust monitoring locations are outside the area of the Application Site which is the focus of this rEIAR. However, the dust monitoring results give an indication as to the historic dust levels in the area of the Littleton Bog Group during site activities.

AERs for have been produced for every year in the range 2002 – 2024. However, dust monitoring results are not provided from 2019 to 2024 and therefore dust monitoring results are generally associated with the Peat Extraction Phase (with results from only one year, 2018, being part of the Current Phase). . Table 9-5 details the maximum annual result recorded at the monitoring locations as reported in the previous AERs for the Littleton Bog Group. There were exceedances of the 350 mg/m^2/day limit value for dust deposition at all four dust monitoring locations throughout the 2002 – 2018 time period over which dust monitoring took place.

Remedial Phase were put in place to rectify dust emission exceedances. The AERs note that extensive training programmes with staff were implemented to raise awareness regarding dust emissions from site activities across the Littleton Bog Group and that particularly dusty activities were ceased if weather conditions were favourable to dust, i.e. dry and windy weather.

There have been no dust-related complaints reported in the AERs for the Littleton Bog Group over the 2002 – 2024 period which indicates that while dust monitoring at the four monitoring locations demonstrated exceedances, local residences were not significantly affected by dust emissions from the Application Site.

Based on the average dust monitoring results for the Littleton Bog Group, a baseline concentration of 575 mg/m^2/day for dust deposition has been established at the Application Site.

Table 9-5: Maximum Annual Dust Deposition Monitoring Results

Year	DSL 1 (mg/m^2/day)	DSL 2 (mg/m^2/day)	DSL 3 (mg/m^2/day)	DSL 4 (mg/m^2/day)	No. of dust complaints
2002	251	1812	166	-	0
2003	231	712	478	-	0
2004	300	1649	629	-	0
2005	258	997	666	-	1
2006	258	775	473	140	0
2007	324	729	277	307	0
2008	375	1715	295	357	0
2009	252	277	340	241	0
2010	873	790	406	382	0

Year	DSL 1 (mg/m²/day)	DSL 2 (mg/m²/day)	DSL 3 (mg/m²/day)	DSL 4 (mg/m²/day)	No. of dust complaints
2011	376	516	610	464	0
2012	135	363	172	236	0
2013	208	324	379	294	0
2014	391	602	258	417	0
2015	146	270	231	214	0
2016	1788	413	344	801	0
2017	5147	442	884	544	0
2018	1027	1474	211	267	0
2019 to current day	n/a	n/a	n/a	n/a	n/a
Average	**726**	**815**	**401**	**359**	**0**

9.3.3 Sensitive Receptors

In addition to establishing baseline air quality at the Application Site, it is necessary to assess the sensitivity of the Study Area (see Section 9.2.6) to dust impacts in accordance with IAQM guidance (2024). The term “area” in this context refers specifically to the Study Area. Both receptor sensitivity and proximity to works areas are taken into consideration.

As outlined in Section 9.2.6, high-sensitivity receptors are residential properties where people spend most of their time. Medium-sensitivity receptors include commercial properties and workplaces, while low-sensitivity receptors are locations where people are present only briefly or where amenity expectations are minimal.

Dust deposition can occur up to 250 m from works areas (i.e., locations where dust-generating activities take place), with most deposition occurring within the first 50 m (IAQM, 2024). The number of receptors within 250 m of the Application Site was identified using aerial mapping. Although the 1988 baseline may have included fewer properties, using current property numbers provides a conservative assessment.

In terms of sensitive receptors there are no residential properties within 20m of the Application Site boundary. There are a total of 31 no. high sensitivity residential properties within 250m of the Application Site boundary. As per the criteria in Table 9.6 below the worst-case sensitivity of the Study Area to dust soiling impacts is Low.

Table 9-6: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

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

In addition to assessing sensitivity to dust soiling, the IAQM guidelines provide criteria for evaluating the study area's sensitivity to human health impacts. These criteria consider the current annual mean PM_{10} concentration, the sensitivity of nearby receptors, and the number of receptors located within various distance bands from the works. A conservative estimate suggests that the historical annual mean PM_{10} concentration is well below the threshold of 24 µg/m³ (Table 9-7). Within 20 metres of the Application Site boundary, there are no high-sensitivity residential properties. Based on this, and in accordance with Table 9-7, the worst-case sensitivity of the Study Area to dust-related human health impacts is classified as Low.

Table 9-7: Sensitivity of the Area to Dust Related Human Health Effects

Receptor Sensitivity	Annual Mean PM10 Background Concentration	Number of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	< 24 ug/m3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
Medium	< 24 ug/m3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24 ug/m3	>1	Low	Low	Low	Low

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

9.3.3.1 Sensitive Ecological Receptors

The IAQM guidelines (2024) also set out criteria for assessing the sensitivity of an area to ecological impacts from dust. These criteria consider whether the receiving environment is designated as a Special Area of Conservation (SAC), Special Protected Area (SPA), Natural Heritage Area (NHA), proposed Natural Heritage Area (pNHA), or if the site is a local nature reserve or supports sensitive plant or animal species. Laffansbridge pNHA is located 3.6 km south of the Application Site boundary and Kilcooly Abbey Lake pNHA is located 5.0 km to the east of the Application Site boundary.

As per Table 9-8, due to the distance of the Ecological Receptors from the Application Site boundary, the sensitivity of the Study Area to dust-related ecological impacts is Low.

Table 9-8: Sensitivity of the Area to Dust-Related Ecological Effects

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

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

9.4 Assessment of Significant Air Quality Effects

9.4.1 Do-Nothing Scenario

As outlined in the EPA Guidelines (May 2022), the description of 'Do-Nothing Effects' relates to the environment as it would be in the future should the proposed project not be carried out. The assessment period of this rEIAR commenced in 1988, a time at which peat extraction was already well-established at the site. In the context of this rEIAR, the Project has been ongoing since the baseline assessment year of 1988. As outlined in Section 3.3, peat extraction activities commenced at the Application Site in 1941 with the installation of drainage.

The 'Do-Nothing' option is defined as the Project (as described in Section 4.3 of Chapter 4 - Description of the Development, Volume 2) having ceased at the Application Site in 1988.

In the event of the cessation of the Project at the Application Site in 1988, it is assumed that those lands which by that point had not been subject to the installation of drainage and peat extraction would have remained as a relatively intact raised bog with varying raised bog habitats (such as bog woodland, fen, sphagnum mosses).

Subsequently, other land-use practices may also have taken place on the Application Site such as agricultural or commercial forestry, or other commercial or non-commercial uses. Under this 'Do-Nothing' option, IPC Licence Ref. P0499-01 would not have been granted by the EPA in 2001, and associated decommissioning and planned rehabilitation would not have occurred.

For those lands which as of 1988 had been subject to the installation of drainage in preparation for peat extraction but not peat extraction itself, it is assumed in the 'do-nothing' scenario that drainage would have remained insitu. Maintenance works to keep established drainage channels clear would have ceased as of 1988 in the 'do-nothing' scenario. It is likely that these areas would have been subject to natural recolonisation of the bog surface. Minor third party turbary activities likely would have occurred along the intact bog edges as was common practice at sites such as the Application Site.

Peat extraction was underway at the Application Site prior to the required date for the transposition of the EIA Directive in 1988. If peat extraction and related activities ceased from 1988 onwards, then the various residual effects, described throughout this rEIAR, would not have occurred.

However, consideration must be given to the following:

- The legislative mandate given to Bord na Móna in the form of the Turf Development Act 1946, as amended to acquire and develop peatlands; and,
- The uncertainty with respect to the planning status of the activity did not arise until 2019 and was not evident in 1988.

Therefore, this 'Do-Nothing' option was not the chosen option. Peat extraction and ancillary activities have occurred at the Application Site from July 1988 onwards. A decision to cease peat extraction at the Application Site was taken in 2017 and the Application Site needs to be considered in the context of regularising (without prejudice) the planning status of the lands to facilitate future development (subject to planning consent as required). The Application Site has and will continue to revegetate, and there will be a change from areas of cutover peatland to revegetated peatland. These are described in the individual chapters of the rEIAR.

In the event that Substitute Consent is not granted, in effect, the "Do Nothing" option represents the current situation as at the date of the application for Substitute Consent. As part of Bord na Móna's statutory obligations under IPC Licence requirements, Cutaway Bog Decommissioning and Rehabilitation Plans will continue to be implemented for the Application Site separate to, and independent of, the Substitute Consent application. The implementation of the plans is included in the impact assessment below.

The role of cutaway/cutover peatlands such as the Application Site as a significant potential resource for amenity, tourism, biodiversity enhancement and conservation, improvement in air quality, climate mitigation, renewable energy development and education are part of Bord na Móna's vision for the Application Site. The regularisation of the planning status of the Application Site is a significant facilitator in ensuring the sustainable use and management of these peatlands. If this does not occur, the opportunity to continue employment and alternative use of the Application Site for the potential resources and activities mentioned above will be significantly restricted.

9.4.2 References to Project Phases

For the purposes of this rEIAR, the Project is defined under three different timeframes termed 'phases':

- 'Peat Extraction Phase': peat extraction and ancillary activities at the Application Site from July 1988 to the cessation of peat extraction in 2017 (July 1988 – 2017). The Peat Extraction Phase is described in detail in Sections 4.4 to Section 4.7 of Chapter 4 - Description of the Development, Volume 2.
- 'Current Phase: the management of the Application Site since 2017 to present day including decommissioning works and Rehabilitation Phase 1 works. The Current Phase is described in detail in Section 4.7 and Section 4.8 of Chapter 4 - Description of the Development, Volume 2.

- 'Remedial Phase': the activities intended to be carried out at the Application Site into the future (Rehabilitation Phase 2 works). The Remedial Phase is described in detail in Section 4.9 of Chapter 4 - Description of the Development, Volume 2.

9.4.3 Peat Extraction Phase (1988 – 2017)

To align with the timeline methodology (Section 1.1.1, Chapter 1 - Introduction, Volume 2), the project description differentiates between activities carried out before and after the 1988 transposition of the EIA Directive. While the baseline assessment of the project scope begins in 1988, Chapter 4 - Description of the Development, Volume 2, includes a summary of activities that occurred prior to that date.

9.4.3.1 Vehicle Emissions

No historical records are available regarding vehicle traffic volumes during the Peat Extraction Phase. However, as outlined in Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2, all peat extracted from the bogs within the Application Site was transported via dedicated, private internal rail lines to the on-site Littleton Briquette Factory. Consequently, Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2, concludes that an assessment of HGV impacts was not required, as peat transport did not affect the local road network.

The impact of staff vehicle movements on the local road network was assessed in Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2 of this rEIAR. Due to the absence of precise historical traffic data, traffic count data from a survey by Traffinomics Ltd., conducted in 2023, together with census data from 2022; was used to estimate traffic volumes in 1988 based on census data from 1986 and 1991 (please see Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2, for more details on the methodology of estimating traffic volumes).

Staff numbers, based on Bord na Móna records, are presented in Table 13.4. As noted in Section 9.2.7.1 and Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2, staff-related traffic was estimated to account for less than or equal to 5.2% of total ADT on the local road network during this phase:

- 5.2% on the L4101
- 3.5% on the R639 (Littleton)
- 2.1% on the R639 (Urlingford).

According to TII significance criteria, a neutral air quality impact occurs when the change in pollutant concentration at a receptor is 5% or less, and the background annual mean concentration is 75% or less of the relevant air quality standard. A negative impact is defined as any increase that exceeds these thresholds. Thus, as we have only identified a marginal exceedance (0.2% above the 5% on the L4101), and even if the TII screening criteria had been exceeded and roads were considered "affected," an impact would only occur if annual mean concentrations of NO_2, PM_{10}, or $PM_{2.5}$ increased by more than 5% at a sensitive receptor, and background levels exceeded 75% of the standard—i.e., greater than 30 µg/m³ for NO_2 and PM_{10}, and greater than 18.75 µg/m³ for $PM_{2.5}$ (see Table 9.1).

As shown in Section 9.3.1, historical background pollutant concentrations for representative locations were significantly below these thresholds. Combined with the predicted traffic increase of less than 5.2%, it is unlikely that staff vehicle movements during the Peat Extraction Phase resulted in air quality impacts greater than neutral.

Furthermore, the density of receptors within the 200 m study area of roads used by staff and rail lines was low, with fewer than 30 properties potentially affected. Using the TII PE-ENV-01106 guidance (2022) and historical air quality data for Zone D (Section 9.3.1), the worst-case impact from vehicle emissions is considered neutral. In EIA terms, this equates to a direct, negative, long-term, and imperceptible effect.

9.4.3.2 Dust Emissions

Peat extraction and ancillary activities likely generated dust impacts at nearby properties. According to IAQM guidance (2024), dust impacts typically occur within 250 metres of the works area, with most deposition occurring within the first 50 metres. However, once extracted, peat was stockpiled and covered to prevent wind dispersion and maintain dryness, significantly reducing potential dust emissions from stored material (see Chapter 4 - Description of the Development, Volume 2).

Dust deposition monitoring within the Littleton Bog Group—representative of the Application Site and reported in the AERs (see Section 9.3.2)—recorded many exceedances of the dust deposition limit value of 350 mg/m²/day. While these figures likely underestimate emissions during initial site preparation and peat extraction prior to 1988, they provide a useful indication of general dust deposition trends between 2002 and 2017.

Peat extraction and ancillary activities are considered 'Earthworks' under IAQM guidance (2024), given their similarity to excavation and earth-moving operations on construction sites. Due to the scale of the Application Site (ca. 1,616ha), these works are classified as large. By combining the dust emission magnitude with the sensitivity of the surrounding area (see Section 9.3.3), the overall risk of dust impacts can be determined. The area is assessed as having:

- Low sensitivity to dust soiling,
- Low sensitivity to dust-related human health impacts, and
- Low sensitivity to dust-related ecological impacts.

Based on IAQM criteria (Table 9-9), this results in:

- Low risk of dust soiling impacts,
- Low risk of dust-related human health impacts, and
- Low risk of dust-related ecological impacts.

Considering these predicted risks and the record of historic dust complaints (Section 9.3.2), dust emissions from peat extraction and ancillary activities are assessed as direct, long-term, localised, negative, and slight in effect

Table 9-9: Risk of Dust Impacts - Earthworks

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

9.4.4 Current Phase (2017 – Present Day)

9.4.4.1 Vehicle Emissions

Peat extraction ceased at the Application Site in 2017. Following the cessation of peat extraction, any remaining peat stockpiles were delivered to Shannonbridge Power Station and Derrinlough Briquette Factory with the last stockpile being sent here in mid 2019. Deliveries of this material were completed with Heavy Goods Vehicles and as a result would have resulted in vehicular emissions during the Current Phase. However, the emissions from this would had a temporary and imperceptible negative effect on air quality.

9.4.4.2 Dust Emissions

During the Current Phase (2017 to present), activity at the Application Site has significantly reduced following the cessation of peat extraction. Current site operations are limited to decommissioning, and rehabilitation works (see Section 4.9 of Chapter 4) - Description of the Development, Volume 2.

As per IAQM guidance (2024), dust emissions typically occur within 250 metres of works areas, with the majority of deposition occurring within the first 50 metres. There are 33 sensitive residential receptors within 250 metres of the Application Site, including 6 located within 50 metres. Given the limited scope of works and the small number of receptors within the highest impact zone, dust emissions during this phase are assessed as direct, long-term, localised, negative, and imperceptible.

9.4.5 Remedial Phase

There are minimal works involved in the Remedial Phase that have the potential to impact air quality. The primary activities will involve re-vegetation of areas within the Application Site, drain blocking, re-wetting of the bogs where possible. Monitoring of the Application Site will be undertaken to ensure stabilisation of the site and complete re-vegetation.

As per Section 9.3.3 the area is of low sensitivity to dust soiling and low sensitivity to dust-related human health impacts and low sensitivity to dust soiling of vegetation. These sensitivities are also applicable to the Remedial Phase. There is a worst-case low risk of dust impacts as a result of dust emissions during the Remedial Phase due to the level of works involved and the overall sensitivity of the area. The effects on air quality from dust emissions will be direct, long-term, localised, negative, and imperceptible.

There will also be a low number of vehicles and machinery required for drain blocking activities and for ongoing monitoring of the site. Emissions from site machinery and vehicles accessing the Application Site during the Remedial Phase will result in a neutral effect on air quality due to the low volume of vehicles involved (see Chapter 13 - Material Assets (including Traffic and Transportation), Volume 2).

9.4.6 Risk of Major Accidents and Natural Disaster

Due to the nature of the Application Site and the activities undertaken as part of the Development, a significant risk of major accidents and natural disasters in relation to air quality is not envisaged for any phase of the Application Site. No major accidents or disasters have been reported for the Application Site in the past.

9.4.7 Cumulative and Indirect Impacts

According to the IAQM guidance (2024), cumulative dust impacts can occur within 500m of the site. The following developments, from 1988 to present, have been included within the cumulative assessment as they are within 500m of the Application Site and have relevant air emissions which may have led to cumulative impacts.

- Littleton Briquette Factory
- Site of the Former Littleton Briquette Factory
- The M8 Motorway
- Historical industrial peat extraction proximate to the Application Site Future Uses of the Application Site

The potential cumulative impacts with the identified developments and the Application Site are assessed below. A full description of the cumulative developments is included within Section 2.9 of Chapter 2 - Background, Volume 2.

9.4.7.1 Littleton Briquette Factory

In the context of air quality, the most notable development which has the potential to act cumulatively with the peat extraction and ancillary activities is the Littleton Briquette Factory with its associated buildings and activities. This factory formed a substantial part of the Industrial Emissions licensing, with the Annual Environmental Reports indicating that emissions to air from the factory were sometimes non-compliant with the criteria set out in the license. Despite the exceedances of licensed thresholds, there are no records of complaints regarding air quality.

It is important to note that the IPC licence issued in 2001 required a number of upgrades to the existing performance of plant on site in order to mitigate potential effects on air quality. The upgrades completed as a result of the licence requirements included:

- The complete replacement of the internal parts of the grit arrestor and fitting of a new model airlock on the boiler stack (B101) in the year 2002.
- A new scrubber arrangement was fitted on the Conveyor Exhaust Stack (A103), also carried out in 2002, which reduced the emission to within the emission limit value (ELV).
- The Stemple Suction Stack (A104) was improved in the latter part of 2002 such that it began operating below the ELV. This was achieved by maintenance works on the existing Cyclone and Airlock at that time, with a full replacement of the unit in 2003 which further improved performance.

Additional improvements were made in the years following these initial upgrades:

- In 2010, a new "double filtering arrangement" was installed in the boiler stack, comprising two primary cyclones follows by a multicyclone filter.
- In 2011, it was proposed to relocate the Induced Draft Fan on the boiler to further improve the emission abatement system, and in 2012 the AER notes that there are "corrective actions ongoing".

The exceedances of the thresholds reported in the AERs indicate that the impact on air quality as a result of the Littleton Briquette Factory was significant. Therefore, it is concluded that the cumulative effect as a result of the emissions from the factory, in combination with the dust and vehicular emissions associated with the Peat Extraction Phase would have resulted in a likely, significant, long-term negative effect on air quality.

9.4.7.2 Site of the Former Littleton Briquette Factory

There is an existing ESB substation at the site of the former briquette factory. There has also been a 'roofed structure' and 'signage' erected at the site. It is possible that the construction of the substation resulted in emissions to air which acted cumulatively with the Peat Extraction Phase. However, such emissions would have only occurred during construction, and due to the distance from sensitive receptors it would be unlikely to have been significant. The operational substation, roofed structure and signage do not have any potential to act cumulatively on air quality during the Current Phase. Potential decommissioning of these structures in the future may have a short-term negative effect on air quality during decommissioning works, however this effect is likely to be imperceptible and therefore will not have a significant cumulative effect with the Remedial Phase.

9.4.7.3 The M8 Motorway

The M8 motorway is a significant development in the local and would have been constructed in parts through numerous planning applications to both the local authority and An Coimisiún Pleanála (formerly An Bord Pleanála). In this context, the part of the motorway which runs adjacent to the Application Site has been considered as part of this cumulative assessment.

The potential for in-combination impacts to air quality would have arisen primarily during the construction phase of the M8. The construction of the section of the M8 in proximity to the Application Site would have taken place in the mid 2000's, therefore coinciding with the Peat Extraction Phase. Dust emissions from the road works may have acted cumulatively with dust emissions from the peat extraction. However, due to the short distance that dust will travel, it is unlikely that the dispersion of dust from each project intersected at any sensitive receptor. Vehicular emissions including NO_2 would not have been significant during the construction phase of the M8; there is likely to be more vehicular emissions now that the road is operational. However, these emissions dissipate rapidly into the open air of this rural environment. As such, it is unlikely that the M8 motorway has resulted in any significant cumulative effects on air quality.

9.4.7.4 Historical industrial peat extraction proximate to the Application Site

Historical peat extraction proximate to the Application Site involved the same peat extraction activities as were carried out on the Littleton Bogs, and occurred during the Peat Extraction Phase. Due to the similar plant in use, the same substrate being worked on, during the same period and in close proximity to the site; it is likely that the peat extraction works acted cumulatively with the works associated with the Peat Extraction Phase. The cumulative effect was likely, significant, negative, long-term.

9.4.7.5 Future Uses of the Application Site

In line with the Applicant's vision to assist in achieving a climate neutral Ireland by 2050, it is intended to utilise the Application Site for both peatland remediation and wind energy infrastructure and to facilitate environmental stabilisation of the Application Site and the optimisation of climate action benefits.

There is the potential for cumulative dust emissions to occur due to the future wind farm development and the remedial works on site. As discussed in Section 9.4.4, there are minimal works involved in the Remedial Phase and impacts from dust emissions and vehicle exhaust emissions are predicted to be imperceptible in relation to air quality. The cumulative effects are predicted to be short-term, localised, direct, negative and imperceptible.

9.5 Mitigation and Monitoring Measures

9.5.1 Peat Extraction Phase (1988–2017)

9.5.1.1 Vehicle Emissions

Chapter 4 - Description of the Development, Volume 2 outlines general control measures that were in place on site prior to the implementation of the IPC licence. The measures imposed with the granting of the IPC licence for the site brought further mitigation and monitoring into the peat extraction phase.

In relation to vehicles and machinery, the below measures were enacted on site:

- Fuel-efficient machinery: Over time, Bord na Móna transitioned to more modern diesel-powered tractors and locomotives with cleaner exhaust emissions, particularly from the late 1990s onward.
- Bunded refuelling practices: Refuelling was primarily done at Littleton Works using bunded tanks and mobile refuelling units. These practices were upgraded in 2001 to meet IPC Licence standards.
- Maintenance protocols: Regular servicing and cleaning of machinery (including power steam washing) were implemented to reduce particulate emissions.

9.5.1.2 Dust Emissions

Dust emissions are dramatically reduced where rainfall has occurred due to the cohesion created between dust particles and water and the removal of suspended dust from the air. High levels of moisture either retained in soil or as a result of rainfall help suppress the generation of dust due to the cohesive nature of water between dust particles. Rain also assists in removing dust from the atmosphere through washout. It is typical to assume no dust is generated under 'wet day' conditions where rainfall greater than 0.2mm has fallen (USEPA, 2006). Mullingar meteorological station, a meteorological station located in Ireland's midlands and likely to be representative of the Application Site, had 209 days (57% of the year) with greater than 0.2mm rainfall annually over a 30-year averaging period (1979 – 2008). Therefore, the majority of the time dust emissions were reduced naturally due to meteorological conditions.

In addition to the natural mitigation provided by rainfall, mitigation measures controlling dust emissions from the site included:

- Vegetation buffers: Tree cover along bog fringes was preserved to reduce off-site dust transport.
- Stockpile management: Peat stockpiles were compacted and covered with polythene sheeting, anchored with high-moisture peat to prevent wind erosion.

- Operational controls: Extraction during windy conditions was avoided; headlands were kept clean; and slow driving was enforced on dusty routes.

A review of the AERs from 2002 to 2018 shows that a number of mitigation measures were implemented throughout the peat extraction phase in an effort to control dust emissions.

- In 2014, an "Air Abatement System Proposal" had been drawn up and was with the EPA for review. Six hydraulic harrows were deployed at dust sensitive locations in 2014.
- In 2017, ten hydraulic harrows were deployed at dust sensitive locations and an independent consultant was appointed to advise on reducing air emissions. Factory activities ceased the following year.

From 1988 to 2017, it is considered that the majority of the time, dust emissions were reduced naturally due to meteorological conditions. Condition 5.7 of the IPC licence which came into effect in August 2001 for the site specifies the following dust control measures were to be implemented on site within 12 months of granting of the licence.

Condition 5 Emissions to Air

5.7 In relation to Dust Control the licensee shall, within twelve months of the date of grant of this licence, develop, for implementation, procedures to ensure that:

- shelter belts are planted in sensitive areas,
- harvesting in sensitive areas is avoided during windy weather,
- where possible machinery use grass pathways,
- stockpiles are sheeted where possible,
- moving machinery maintains slow speeds when travelling along dusty headlands,
- when harvesting, the jib is maintained low to the stockpile,
- shelter belts are planted around outloading facilities,
- road transported peat is adequately covered (sheeted or similar),

In relation to monitoring, as per Section 9.3.2, dust monitoring was required as part of the IPC licence for the site and was conducted every year from the commencement of the IPC licence to the end of peat extraction activities, with the results reported within the AER for the site.

9.5.2 Current Phase (2017 – Present Day)

Peat extraction ceased in 2017, significantly reducing emissions from machinery and dust-generating activities. Removal of stockpiles, fuel tanks, and machinery has been undertaken to eliminate residual emission sources.

The site remains under IPC Licence P0499-01, which mandates continued monitoring of emissions to air, including dust and combustion efficiency.

9.5.3 Remedial Phase

Drain blocking and rewetting will reduce the risk of dust and spontaneous combustion. Natural revegetation stabilizes bare peat areas, further reducing airborne particles.

The Remedial Phase does not involve combustion or heavy machinery use that would generate significant emissions.

The dust control measures outlined under condition 5.7 of the IPC licence for the site should be implemented throughout the Remedial Phase of the Application Site to ensure dust emissions are minimised until the licence is surrendered.

9.6 Residual Effects

9.6.1 Peat Extraction Phase (1988–2017)

Emissions from vehicles during the Peat Extraction Phase would have impacted air quality. The impact of additional vehicles on the local road network was considered with reference to the TII screening criteria (2022). It was concluded that the worst-case impact of traffic emissions associated with peat extraction activities was direct, negative, long-term and imperceptible.

The peat extraction and ancillary activities would have led to some dust emissions with the potential to cause soiling and human health impacts at nearby sensitive receptors. It has been established that the peat extraction works had a low risk of dust soiling impacts, a low risk of dust-related human health impacts and a low risk of dust soiling impacts on vegetation. As part of the IPC licence for the site a number of dust control measures were required to be implemented. In addition, dust monitoring was required to ensure dust emissions were not causing issue at nearby sensitive receptors.

Dust monitoring results from the AER reports from 2002 to 2018 indicated that dust limits set out in the IPC licence conditions were exceeded on many occasions. Nevertheless, there are no dust-related complaints.

It can be concluded that the activities at the Application Site had a long-term, localised, direct, negative and slight effect on air quality.

9.6.2 Current Phase (2017 – Present Day)

There are relatively few sensitive receptors located in close proximity to the Application Site. With the dust control measures required under the site's IPC licence in place, dust emissions during the Current Phase are expected to be unlikely, occasional, negative and negligible. Therefore the effects on air quality as a result of dust emissions are considered to be imperceptible.

Similarly, due to the low volume of vehicles and machinery involved, exhaust emissions are predicted to be likely, intermittent, negative and negligible. Therefore the effects on air quality as a result of vehicle emission are considered to be imperceptible.

9.6.3 Remedial Phase

Dust emissions during the Remedial Phase are expected to result in a direct, long-term, localised, and negative impact on air quality. However, this effect is considered imperceptible.

Vehicle emissions during this phase are also expected to be likely, intermittent, negative and negligible due to the very low number of vehicles required to carry out the works. Therefore the effects on air quality as a result of vehicle emission are considered to be imperceptible.

9.7 References

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