Proposed Derrygreenagh Power Project
Environmental Impact Assessment Report

Chapter 7: Air Quality

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7.0 AIR QUALITY

7.1 Introduction

7.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) addresses the likely significant effects of the Proposed Development and Overall Project on air quality. The Proposed Development and Overall Project comprises a Power Plant Area (which includes a Combined Cycle Gas Turbine (CCGT) unit and an Open Cycle Gas Turbine (OCGT) unit), an Electricity Grid Connection including substations and associated buildings and infrastructure ('the Proposed Development') and a Gas Connection Corridor ('Overall Project').

7.1.2 A full description of the existing Site is presented in **Chapter 4** of this EIAR, while details of the Proposed Development and Overall Project are presented in **Chapter 5** of this EIAR.

7.1.3 Activities associated with the construction and operation of the Proposed Development have the potential to change the atmospheric concentration of air pollutants or to change the rate of dust deposition from air, compared to baseline conditions. Emissions from combustion plant, including engines include a large number of substances, but the ones of relevance to this assessment are particulate matter (size fractions of PM_{10} and $PM_{2.5}$), oxides of nitrogen (NOx), nitrogen dioxide (chemical formulae NO_2), Carbon Monoxide (Chemical formulae CO). Some engine exhaust abatement systems also emit ammonia (chemical formulae NH_3). Particulate matter can also be generated by construction activities (including earthworks, material handling or storage of materials) and these 'fugitive' emissions have the potential to change the rate at which dust deposits and accumulates on surfaces and this in turn can affect public amenity or the growth of plants.

7.1.4 This chapter considers the magnitude of change that is likely to occur from these potential emissions and then considers the effect that would occur as a consequence of that change. Professional judgement is then used to determine if the likely effects would be significant or not. This approach is internationally recognised as good practice for the assessment of air quality impacts as it not always possible to establish what effects are likely without some initial element of assessment. The chapter provides a clear description of the likely significant effects, associated with releases to atmosphere during the construction, operation (including maintenance) and decommissioning of the Proposed Development and Overall Project.

7.1.5 This assessment considers:

- The effects from construction and decommissioning activities that have the potential to emit particulate matter (size fractions of dust, $PM_{2.5}$ and PM_{10}) and change baseline airborne concentrations and dust deposition rates at sensitive receptor locations, including ecological features within designated habitat sites.
- The effects on air quality from road traffic emissions related to the construction, operation and decommissioning of the Proposed Development and Overall Project;
- The effects from the Power Plant Area during operation, with consideration of potential impacts from emissions of NOx, CO, PM_{10} and ammonia at sensitive human and ecological receptors); and
- Confirmation of an appropriate release height for all stacks so that direct and cumulative significant effects are avoided at air quality sensitive resources/ receptors.

7.1.6 The air quality impact assessment was carried out assuming that the development complies with emission limit values (ELVs) set out within the Industrial Emissions Directive (2010/75/EU) and Best Available Techniques (BAT) Reference Document for Large Combustion Plants (Commission Implementing Decision EU) 2021/2326).

7.2 Methodology

Introduction

7.2.1 The air quality assessment has been undertaken with reference to the Environmental Protection Agency's (EPA) *'Guidelines on the information to be contained in environmental impact assessment reports'* (EPA, 2022).

7.2.2 The EPA guidance gives a framework for what needs to be included in an air quality impact assessment and highlights the importance, that professional judgement plays in the determination of significance. Where professional judgement is applied the EIAR should set out the basis of these judgements clearly so the basis for the decision making is transparent to all stakeholders. In this chapter the basis for judgements is described in each subsection as each aspect of the assessment is considered.

7.2.3 Further detail on the methodology and approach taken in respect of this assessment are provided within Appendix 7A in EIAR Volume II.

7.2.4 The technical assessment report within EIAR Appendix 7A (refer to EIAR Volume II) provides a detailed description of the definition of sensitive human and ecological receptors as well as justification for the selected emissions stack heights.

7.2.5 The Power Plant Area has been designed in accordance with Best Available Techniques for Large Combustion Plant (Commission Implementing Decision (EU) 2021/2326). The power plant site application is for a Combined Cycle Gas Turbine and Open Cycle Gas Turbine technology operating primarily off natural gas with dual fuel capability for firing of secondary fuel stored onsite.

Assessment of Potential Construction Dust Impacts

7.2.6 The construction phase for the Proposed Development and Overall Project is assumed to be 4 years in total duration, with the construction of the Power Plant Area (as defined in chapter 5) spanning 4 years, the Electricity Grid Connection almost 3 years and the Gas Connection Corridor element almost 2 years. There is the potential for impacts on local air quality and public amenity from emissions generated during the construction phase of the Proposed Development and Overall Project. A qualitative risk-based assessment has been undertaken to assess the significance of any effects on sensitive receptors associated with the construction phase. This assessment considers the effect on amenity due to increased rates of dust deposition and the effect on human health due to changes in concentrations of particulate matter (PM_{10} size fraction).

7.2.7 The assessment is consistent with the framework approach developed by the Institute of Air Quality Management's (IAQM) guidance on the assessment of dust from demolition and construction (IAQM, 2023). The IAQM's approach is not prescriptive but provides examples of how impacts could be reported, and the terminology to be applied. The potential dust emissions magnitude for each construction activity is used as a relative measure of the scale of fugitive emissions that could potentially occur from a small, medium, or large site. The assessment considers the risk of dust impacts to sensitive receptors resulting from potential emissions from demolition, earthworks, construction and trackout activities (HGV movements on unpaved roads and offsite mud on the highway), by taking into account the nature and scale of works, the location of receptors relative to the works, and the local meteorological conditions.

7.2.8 Based on the level of risk of dust impacts identified in the assessment, mitigation measures to reduce the risk of dust impacts from the Proposed Development and Overall Project can be identified. For the proposed activities and mitigation in place, the potential for significant effects from dust impacts on human health, amenity or ecological receptors is determined.

7.2.9 The Study Area for the assessment of construction dust has been applied, using criteria proposed within with the IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2023), and extends:

- Up to 250m beyond the Proposed Development boundary and 50m from the construction traffic route (up to 250m along a hard surfaced road from the Site entrances), for human health receptors; and
- Up to 50m from the Proposed Development boundary and/ or construction traffic route (up to 250m from the Site entrance) for ecological receptors.

7.2.10 The potentially dust generating activities would occur mainly on the Power Plant Area, but also along the Electricity Grid Connection and Gas Connection Corridor. The Power Plant Area and other project infrastructures close by are over 250m from the closest residential property and over 50m from any designated ecological receptors. At the southern end of the electrical connection corridor, there are some residential properties within 50m of the Site boundary, although the construction activities nearby will be limited to the installation of buried cable. Along the length of the Gas Connection Corridor, there are residential properties within 250 m of the Site boundary, although the construction activities nearby will be limited to the installation of the buried pipeline. There will be no construction work for the Proposed Development and Overall Project within 50m of any designated sites of ecological importance.

7.2.11 The movement and handling of soils and spoil during the Proposed Development and Overall Project construction activities will lead to the generation of some short-term airborne dust emissions. The occurrence and significance of dust generated by earth moving operations (note: excavated peat and soils from the brownfield areas of the Proposed Development will be moved to deposition areas within the site, only made ground may be removed off site) is impractical to quantify as the magnitude of emissions depends heavily upon the meteorological and ground conditions at the time and location of the work within the Site, and the nature of the actual activity being carried out.

7.2.12 At present, there are no statutory Ireland or EU standards relating to the assessment or control of dust.

7.2.13 The emphasis of the regulation and control of construction dust is implemented through the adoption of standard good working practice (impact avoidance measures) on site and formalised within a Construction Environmental Management Plan (CEMP) (included within Appendix 5A of this EIAR, refer to EIAR Volume II). The Proposed Development and Overall Project has been designed to avoid significant environmental effects. A presentation of the likely significant effects relating to air quality, in the absence of any mitigation is presented in Section 7.5 below. The mitigation measures which will be implemented to avoid significant effects relating to air quality are then presented, including the use of good working practices to minimise dust formation which is detailed further in Section 7.6 of this chapter.

7.2.14 The IAQM provides guidance for good practice qualitative assessment of risk of dust emissions from construction and demolition activities (IAQM, 2023). The guidance considers the risk of dust emissions from unmitigated activities to cause human health (PM_{10}) impacts, dust soiling impacts, and ecological impacts (such as physical smothering, and chemical impacts for example from deposition of alkaline materials).

The appraisal of risk is based on the scale and nature of activities and on the sensitivity of receptors, and the outcome of the appraisal is used to determine the level of good practice mitigation required for adequate control of dust.

7.2.15 The assessment undertaken for this chapter is consistent with the overarching approach to the assessment of the impacts of construction of the Proposed Development and Overall Project as outlined in EIAR Chapter 1: Introduction (Section 2.3 'The Assessment Approach and Methods'), and the application of example descriptors of change and risk as set out in IAQM guidance. It considers the potential for impacts and recommends good practice control or impact avoidance measures (embedded mitigation) appropriate to the identified risks to receptors. The likelihood of significant effects is considered and if required additional site specific mitigation measures identified and re-assessed to determine the significance of residual effects. The steps in the assessment are to:

- Identify receptors within the screening distance of the Proposed Development and Overall Project;
- Identify the potential magnitude of change through consideration of the scale, duration and location of construction activities being carried out;
- Establish the sensitivity of the area through determination of the sensitivity of receptors and their distance from construction activities;
- Determine the risk of impacts on receptors occurring as a result of the potential magnitude of change and the sensitivity of the area, assuming no additional mitigation (beyond the identified development design and impact avoidance measures) is applied;
- Determine the level of mitigation required based on the level of risk, to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment; and
- Summarise the potential residual likely and unlikely significant effects of the mitigated works.

7.2.16 The approach to the assessment of magnitude, sensitivity and risk are summarised in Appendix 7A in EIAR Volume II.

Assessment of Construction Road Traffic

7.2.17 The incomplete combustion of fuel in vehicle engines results in the presence of Hydrocarbons (HC) such as benzene and 1,3-butadiene, as well as the typical combustion products of CO, PM_{10} and $PM_{2.5}$ in exhaust emissions. Similarly, but to a lesser extent, any sulphur in the fuel can be converted to sulphur dioxide (SO_2) that is then released to the atmosphere. In addition, at the high temperatures and pressures found within vehicle engines, some of the nitrogen in the air and the fuel is oxidised to form oxides of nitrogen (NO_X), mainly in the form of nitric oxide (NO), which is then converted to nitrogen dioxide (NO_2) in the atmosphere. NO_2 is associated with adverse respiratory effects on human health. Better emission control technology and fuel specifications are expected to reduce emissions per vehicle in the long term.

7.2.18 Although SO_2, CO, benzene and 1,3-butadiene are present in motor vehicle exhaust emissions, detailed consideration of the associated impacts on local air quality is not considered relevant in the context of the Proposed Development. This is because the release concentrations of these pollutants are low enough so as to not be likely to give rise to significant effects. In addition, no areas within the local area are considered to be at risk of exceeding relevant air quality standards for these pollutants, and the risks to achievement of the relevant standards in the vicinity of the Proposed Development and

Overall Project are considered negligible. Emissions of SO_2, CO, benzene and 1, 3-butadiene from road traffic are therefore not considered within this assessment.

7.2.19 Exhaust emissions from road vehicles may affect the ambient concentrations of the principal road traffic pollutants, NO_2, PM_{10} and $PM_{2.5}$, at sensitive receptors in the vicinity of the Proposed Development and Overall Project. Therefore, these pollutants are the focus of the assessment of the significance of road traffic air quality impacts.

7.2.20 The assessment methodology follows the guidance set out within TII's (formerly NRA) document *'Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document'*, 2022 'TII Guidance'. In particular, the guidance study area for the assessment of potential impacts from construction vehicle emissions is set to roads with a 10% change in annual average daily traffic flows (AADT).

7.2.21 The TII criteria means an assessment of construction traffic impacts needs to be undertaken as a minimum along the R400 between Rochfortbridge and Rhode and the L1010 Togher between Rhode and Croghan, as the number of HDVs exceeds 200 per day, however the M6 around the junction with the R400 is also included in the model as this is the route most of the construction vehicles will use.

7.2.22 Predicted vehicle movements during the construction phase of the Proposed Development and Overall Project are detailed in EIAR Chapter 14: Traffic. The change in vehicle movements is predicted to peak at 374 one-way LDV (light duty vehicle) movements and 412 one-way HDV (heavy duty vehicle) movements accessing the Proposed Development site via the M6, in terms of impacts on air quality. There are sensitive receptors within 200m of affected links, and therefore a detailed assessment of construction traffic impacts has been conducted.

7.2.23 This assessment has used the latest version of the dispersion modelling software 'ADMS-Roads' (v5.0) to quantify baseline pollution levels at selected receptors due to road traffic emissions. ADMS-Roads is a modern dispersion model that has an extensive published track record of use in the UK and Ireland for the assessment of local air quality impacts, including model validation and verification studies (Cambridge Environmental Research Consultants (CERC), 2018).

7.2.24 The derivation of the traffic data used in this assessment is set out in EIAR **Chapter 14**: Traffic. The data used in the road traffic dispersion modelling has been provided for the following scenarios:

- 2023 surveyed baseline traffic (for model verification process);
- 2025 baseline traffic + committed development traffic (the total future baseline traffic flows for the Construction assessment); and
- 2025 baseline traffic + committed development traffic + peak construction traffic from the Proposed Development and Overall Project (the total traffic flows with the Proposed Development for the Construction assessment).

7.2.25 The future decommissioning baseline scenario has not been assessed due to the lack of future traffic projections for when the Proposed Development is likely to be decommissioned after 2052 (25-year life). Furthermore, traffic volumes associated with the decommissioning of the PPA would be at worst no greater than assessed in the construction scenario.

7.2.26 Data in the form of traffic flows, composition (percentage HDV) and speed have been used in modelling of emissions from road traffic during the construction phase of the Proposed Development and Overall Project and are presented in Appendix 7A in EIAR Volume II.

7.2.27 This assessment has used emission rates for 2025 to represent the future baseline and peak construction assessment year scenarios.

Assessment of Emissions Generated from Construction Site Plant (Non-Road Mobile Machinery (NRMM))

7.2.28 The IAQM guidance on the assessment of dust from demolition and construction dust guidance (IAQM, 2016) includes some discussion of onsite plant and NRMM emissions and states:

> *"Experience of assessing the exhaust emissions from onsite plant … and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.* For *site plant and onsite traffic, consideration should be given to the number of plant/ vehicles and their operating hours and locations to assess whether a significant effect is likely to occur."*

7.2.29 In this instance, the closest human health sensitive receptor is approximately 1,200 m from the nearest point of the Proposed Development.

7.2.30 TII guidance (2022) identifies that a source of road traffic emissions that is in excess of 200m from a receptor is not likely to contribute to a significant effect and does not require quantification. For the purpose of this assessment, it is considered that such conditions also apply to Proposed Development and Overall Project plant and NRMM, due to the similar height of emissions release and the intermittent and transient nature of those emissions. As such, and due to the distance between the construction site boundary (and works within) and the nearest air quality sensitive receptors, it is considered that site plant and NRMM emissions impacts will not have a significant effect on local air quality. The impact of construction phase site plant and NRMM emissions has not been considered further.

Assessment of Process Emissions from the Operational Phase of the Power Plant Area.

7.2.31 The assessment of Operational Phase emissions from the Power Plant Area has been undertaken with detailed reference to the EPA's *'Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)'* (EPA, 2020), referred to as "EPA AG4 Guidance".

7.2.32 Once constructed and operational, there would be no emissions to air from the EGC and GCC. The Operational Phase assessment therefore focusses on emissions from the Power Plant stacks.

7.2.33 Detailed dispersion modelling, using the atmospheric dispersion model ADMS 6, has been used to calculate the concentrations of pollutants due to Operational Phase emissions from the Power Plant stacks at identified receptors. These concentrations have been compared with the air quality assessment level for each pollutant species, as summarised in **Table 7.5.**

7.2.34 Dispersion modelling calculates the predicted concentrations arising from the emissions to atmosphere, based on Gaussian approximation techniques. The model is authorised for use by the EPA.

7.2.35 The Power Plant Area includes flue gas stacks (emissions stacks) which will be the emissions points for the CCGT and OCGT Plants, as well as the AGI and GRF dew point heaters and the auxiliary boiler. Natural gas will be the primary fuel source for all non-emergency plant at the Site. Emissions from natural gas-fired plant predominantly include the pollutants NO_X and CO but may also include other pollutants to a lesser extent for some sources, including THC, some of which will comprise of volatile organic compounds (VOC), including CH_2O. A secondary fuel (distillate or Hydrotreated

Vegetable Oil (HVO)) will also be stored within the Power Plant Area. This fuel will only ever be used in the event of an emergency and for limited periods of testing and maintenance.

7.2.36 The key emissions scenario has been modelled, as outlined below:

- Full Load continuous operation, running on natural gas fuel.

7.2.37 To provide full assessment of all potential emissions scenarios, the following scenarios have also been modelled (refer **to Appendix 7A, EIAR Volume II**) as outlined below:

- Backup, running on backup fuel (emergency full load operation); and
- Low Load, running on natural gas fuel;

7.2.38 This chapter focuses on results from the full load continuous scenario with natural gas fuel, as it represents the majority of operational conditions. The impact of the Proposed Development on short-term pollutant concentrations, when operating on secondary fuel, has also been considered in the modelling. The use of secondary fuel would be likely to be very infrequent and would only occur in the case of the loss of the primary fuel supply, hence the impact of long-term operation on the secondary fuel has not been assessed.

7.2.39 The consented, but not yet operational, LEL Castlelost OCGT power plant is around 4km to the north west of the Power Plant Area. Cumulative dispersion modelling of the Proposed Development and emissions to air from Castlelost has therefore been undertaken.

7.2.40 The procedure set out with Appendix E of the EPA AG4 guidance has been used to identify if there are other existing facilities within the “impact area”, a radius of the area from the Proposed Development where there would be an impact of greater than 5% of the air quality standards relevant to the pollutants emitted to air. There are no other nearby emission sources within this radius, and so no existing facilities have been included in the cumulative assessment.

7.2.41 The assessment of a worst-case long-term (annual mean) and short-term emissions scenario resulting from operation of the Power Plant Area has been undertaken by comparison of the maximum Process Contribution (PC) at identified sensitive receptors with the annual mean and short-term objectives, and the Critical Loads and Levels set out in **Table 7.5** for ecological receptors, taking into consideration the baseline air quality, in accordance with the AG4 Guidance.

7.2.42 An assessment of nutrient nitrogen enrichment has been undertaken by applying published deposition velocities to the predicted annual average NO_X concentrations at the identified ecological receptors, determined through dispersion modelling, to calculate nitrogen deposition rates. These deposition rates have then been compared to the Critical Loads for nitrogen published by the Air Pollution Information System (APIS) (Centre for Ecology and Hydrology and APIS, 2020) for the most sensitive species in each individual Habitat site, taking into consideration the baseline air quality.

7.2.43 Critical Loads and Critical Levels are tools for assessing air quality impacts on ecological receptors. The Critical Load relates to the quantity of pollutant deposited from air to the ground, whereas the Critical Level is the atmospheric concentration of a pollutant.

7.2.44 Potential increases in acidity on designated ecological receptors from depositional contributions of NO_X from the PC have also been considered. In this assessment, the nitrogen kilo equivalent (Keq/ha/yr), which are the units in which acidity Critical Loads are measured, have been derived from nitrogen deposition modelling values using standard conversion factors. The acidity deposition rates, and baseline deposition rates have been used within the Critical Load Function Tool available on the APIS website

(Centre for Ecology and Hydrology and APIS, 2020) to determine whether the contribution will result in exceedance of the defined acidity Critical Loads for the most sensitive feature.

Evaluation of Significance – Construction Dust Emissions

7.2.45 For potential amenity effects, such as those related to dust deposition, a scheme would be brought forward within the CEMP to include mitigation measures as necessary, that minimises the potential for amenity (including dust soiling), human health, and ecological impacts as a result of the Proposed Development and Overall Project construction works.

7.2.46 The IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2016) does not provide a method for the evaluation of impacts on receptors from construction dust, rather a means to determine the level of mitigation required to avoid significant impacts on receptors. The guidance indicates that the application of appropriate mitigation should ensure that residual effects will normally be 'not significant'.

Evaluation of Significance – Construction and Operational Emissions (for the Protection of Human Health)

7.2.47 The EPA Guidance (2022) identified that significance of effects "*is usually understood to mean the importance of the outcome of effects (consequences of the change)*". In general, impact significance is defined using a combination of sensitivity (e.g., high, medium and low) of the environmental feature and the magnitude of impact (e.g., major, moderate, slight and negligible). The guidance gives definitions for seven generalised degrees of impact significance that are commonly used in EIA: Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. It also states that "*Significance is a concept that can have different meanings for different topics*" and that "*where more specific definitions exist within a specialised factor or topic, e.g., biodiversity, these should be used in preference to these generalised definitions*".

7.2.48 For air quality, specific sensitivity, magnitude of change, effect, and significance definitions exist. Common definitions for magnitude and effect can be found both in the TII guidance and the professional good practice guidance from the Institute of Air Quality Management (IAQM, 2017), with the latter being quoted for reference in the former, although the IAQM guidance doesn't hold any formal or legal status.

7.2.49 The TII guidance offers guidance defining significance of a scheme in terms of change in pollutants related to the main vehicle emissions (i.e., NO_2, PM_{10} and $PM_{2.5}$). The document sets out impact (change) descriptors at each human receptor, which then inform descriptors for change with consideration to EU limit values, this is outlined in **Table 7.2** and **Table 7.3.** The EPA Guidance uses a seven (7) point scale for effect descriptors and this assessment uses the lower five categories from imperceptible up to significant. The proposed project is physically incapable of causing the magnitude of changes in air pollutant concentrations at the scale required for very significant or profound effects to be experienced.

Table 7.1: Descriptors for Magnitude by Changes in Ambient Pollutant Concentrations

MAGNITUDE OF CHANGE	ANNUAL MEAN NO_2 AND PM_{10}	NO. DAYS WITH PM_{10} CONCENTRATIONS GREATER THAN 50 $\mu G/m^3$	ANNUAL MEAN $PM_{2.5}$
High	Increase/ decrease ≥4 $\mu g/m^3$	Increase/ decrease >4 days	Increase/ decrease ≥2.0$\mu g/m^3$
Medium	Increase/ decrease 2-≥4$\mu g/m^3$	Increase/ decrease 3 or 4 days	Increase/ decrease 1.25-<2.0$\mu g/m^3$
Low	Increase/ decrease 0.4-<2 $\mu g/m^3$	Increase/ decrease 1 or 2 days	Increase/ decrease 0.25-<1.25$\mu g/m^3$
Negligible	Increase/ decrease <0.4 $\mu g/m^3$	Increase/ decrease <1 day	Increase/ decrease <0.20$\mu g/m^3$

Table 7.2: Effect Descriptors for Change to Annual Mean Pollutant Concentrations

ABSOLUTE CONCENTRATION	NEGLIGIBLE MAGNITUDE OF CHANGE	LOW MAGNITUDE OF CHANGE	MEDIUM MAGNITUDE OF CHANGE	HIGH MAGNITUDE OF CHANGE
>40 $\mu g/m^3$ for NO_2/PM_{10} or 20 $\mu g/m^3$ for $PM_{2.5}$	Imperceptible	Slight	Moderate	Significant/
36-40 $\mu g/m^3$ for NO_2/PM_{10} or 18-20 $\mu g/m^3$ for $PM_{2.5}$	Imperceptible	Not Significant	Slightt	Moderate
30-36 $\mu g/m^3$ for NO_2/PM_{10} or 15-18 $\mu g/m^3$ for $PM_{2.5}$	Imperceptible	Not Significant	Not Significant	Slight
<30 $\mu g/m^3$ for NO_2/PM_{10} or <15 $\mu g/m^3$ for $PM_{2.5}$	Imperceptible	Imperceptible	Not Significant	Slight

Table 7.3: Effect Descriptors for Change to the Number of Days with PM10 Concentration Greater than 50 $\mu g/m^3$

ABSOLUTE CONCENTRATION	NEGLIGIBLE MAGNITUDE OF CHANGE	LOW MAGNITUDE OF CHANGE	MEDIUM MAGNITUDE OF CHANGE	HIGH MAGNITUDE OF CHANGE
Above AQS (≥35 days)	Not Significant	Slight	Moderate	Significant
Just Below Objective (32- <35 days)	Imperceptible	Not significant	Slight	Moderate
Below Objective (26- <32 days)	Imperceptible	Not Significant	Not Significant	Slight
Well Below Objective (< 26 days)	Imperceptible	Imperceptible	Imperceptible	Not Significant

7.2.50 When assessing significance of effects on ecological receptors, the TII Guidance states:

> *"Where a scheme is expected to cause an increase in concentration of more than 2 µg/m^3 and the predicted concentrations (including background) are close to (within 10% of), or exceed the standard then the sensitivity of the habitat to NO_X should be assessed by the project Ecologist."*

7.2.51 The guidance also states, with reference to deposition of nitrogen:

> *"The road contribution to dry deposition should then be calculated and compared with the published critical loads for the selected habitat. The chane in deposition due to the scheme should be assessed in relation to the relevant critical load by the project Ecologist."*

7.2.52 As the TII Guidance only refers to pollutants of interest in road scheme assessments, the IAQM Guidance can be referred to for all other pollutants, as described below.

7.2.53 For a change of a given magnitude, the IAQM publication 'Land-Use Planning & Development Control: Planning for Air Quality (IAQM, 2017) has published recommendations for describing the magnitude of long-term impacts at individual receptors and describing the significance (**Table 7.4**) of effects. The EPA Guidance's equivalent descriptor for each condition is adopted in each table. As for the effect descriptors for human health, the EPA's descriptors of very significant and profound are not used in this assessment as the proposed development is physically incapable of causing air quality effects at those scales.

Table 7.4: Air Quality Effect Descriptor for Long Term Changes in Ambient Pollutant Concentrations at Ecological Receptor

LONG TERM AVERAGING CONCENTRATION AT RECEPTOR	PERCENTAGE CHANGE IN ANNUAL MEAN CONCENTRATIONS			
	< 1% Negligible	2-5% Low	6-10% Medium[2]	>10% High
75% or less of AQS	Imperceptible	Imperceptible	Not Significant	Slight
76-94% of AQS	Imperceptible	Not Significant	Slight	Moderate
95-102% of AQS	Not Significant	Slight	Moderate	Significant
103-109% of AQS	Slight	Moderate	Significant	Significant
110% or more of AQS	Slight	Significant	Significant	Significant
AQS = Air Quality Standard (which may be an air quality objective, EU limit or target value, or an Environment Protection Agency 'Environmental Assessment Level (EAL))				

7.2.54 The EPA AG4 guidance document on dispersion modelling (EPA, 2020) does not mention significance as such but defines a maximum allowable PC with respect to the AQS. It is defined as below:

- Maximum Allowable PC = 0.75*(AQS) where there is no significant background concentration; and
- Maximum Allowable PC = 0.75*(AQS – Background) where there is a significant background concentration.

7.2.55 The EPA guidance document on Environmental Impact Assessment (EPA, 2022) does contain a method to determine and describe the effect of a development, but that

approach is not wholly appropriate for air quality. This is because the relationship between magnitude of change in air quality conditions and receptor sensitivity is not linear. Receptor sensitivity to air quality impacts does not have a graded scale and instead, receptors are considered either sensitive to air quality impacts or not sensitive. Furthermore, the impact description of a change in pollutant concentration is not based on the magnitude of change alone, but that change relative to the pollutant concentration experienced at a receptor once the Proposed Development and Overall Project are in operation. The reason for this is to take account that smaller changes in air quality conditions can constitute a greater level of impact than a large change in conditions, where they occur at receptors that are predicted to experience pollutant concentrations close to or in excess of an Air Quality Standard or Environmental Assessment Level. The EPA guidance gives a framework for what needs to be included in an air quality impact assessment and highlights the importance, that professional judgement plays in the determination of significance. Where professional judgement is applied the EIAR should set out the basis of these judgements clearly so the basis for the decision making is transparent to all stakeholders.

Evaluation of Significance – Operational Emissions (for the Protection of Sensitive Ecosystems)

7.2.56 For the purposes of this assessment, effects on nature conservation receptors have been considered to be insignificant (imperceptible or not significant) and therefore screened out from the need for further assessment where the annual mean PC is less than 1% of the relevant environmental standard. This approach is comparable with an approach set out within the UK Environment Agency guidance for assessing emissions to air from combustion processes.

7.2.57 Where an impact on nature conservation receptors cannot be screened out as insignificant using the above criteria, the predicted PC and predicted environmental concentration (PEC) are then reviewed relative to the appropriate Critical Levels and Critical Loads, and the headroom that remains once the Proposed Development and Overall Project are in operation.

Evaluation of Significance – Proposed Development and Overall Project as a Whole

7.2.58 Following the assessment of each individual air quality effect, the significance of all of the reported effects is then considered for the Proposed Development and Overall Project in overall terms. The potential for the Proposed Development and Overall Project to contribute to or interfere with the successful implementation of policies and strategies for the management of local air quality are considered if relevant, but the principal focus is any change to the likelihood of future achievement of the air quality standards (which also relate to compliance with local authority goals for local air quality management and objectives are set for the protection of human health).

7.2.59 In terms of the significance of the effects (consequences) of any impacts, an effect is reported as being either ‘not significant’ or as being ‘significant’. If the overall effect of the development on local air quality or on amenity is found to be ‘moderate’ or ‘major’ this is deemed to be ‘significant’ for assessment purposes. Effects found to be ‘minor’ or ‘negligible’ are considered to be ‘not significant’.

Consultations

7.2.60 Formal consultations have not been undertaken prior to the submission of this EIAR, however lands in the immediate vicinity of the Proposed Development Site have been the subject of a planning application for separate power related development in recent years, which has included the submission of an EIAR. In the preparation of this EIAR,

cognisance has been undertaken of relevant formal consultation, consultee responses and third-party comments in relation to that separate project.

7.3 Regulatory, Policy and Guidance Framework

Legislative Background

National Air Quality Standards

7.3.1 The National Air Quality Standards Regulations (Government of Ireland, 2011) were transcribed from the following EU legislation:

- European Union (EU) air quality legislation is provided within Directive 2008/50/EC (Clean Air for Europe (CAFE)), which came into force on 11th June 2008. This Directive consolidated previous legislation which was designed to deal with specific pollutants in a consistent manner and provided new air quality objectives for particulate matter with an aerodynamic diameter of less than 2.5 µm ($PM_{2.5}$). The consolidated Directives include:
  - Directive 99/30/EC - the First Air Quality "Daughter" Directive - sets ambient Air Quality Limit Values (AQLVs) for NO_2, oxides of nitrogen (NO_X), sulphur dioxide, lead and particulate matter with an aerodynamic diameter of less than 10µm (PM_{10});
  - Directive 2000/69/EC - the Second Air Quality "Daughter" Directive - sets ambient AQLVs for benzene and carbon monoxide;
  - Directive 2002/3/EC - the Third Air Quality "Daughter" Directive - seeks to establish long term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.
- The fourth daughter Directive was not included within the consolidation and is described as Directive 2004/107/EC. This sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.
- Directive 2008/50/EC has been implemented through the Air Quality Standards Regulations 2011 (S.I. No.180 of 2011). These regulations set out upper and lower assessment thresholds for the pollutants of concern. The Air Quality Standards include thresholds to encourage a higher standard of air quality where possible.

7.3.2 The EU Limit Values and National Air Quality Standards that are of relevance to this assessment are presented in **Table 7.5.**

7.3.3 **Table 7.5** also provides Critical Loads for nutrient nitrogen and acid (nitrogen and sulphur), set by the Convention on Long-Range Transboundary Air Pollution (APIS, 2016), for habitats that may potentially be affected by emissions associated with the Proposed Development.

Table 7.5: Air Quality Standards for Human Health and Ecosystems

POLLUTANT	AVERAGING PERIOD	IRISH AIR QUALITY STANDARD/ EU LIMIT VALUE	ALLOWABLE EXCEEDANCE
Irish Air Quality Standard/ EU Limit Value			
Nitrogen Dioxide (NO_2)	Annual mean	40 µg/m^3	No exceedances allowed
	Hourly mean	200 µg/m^3	18 allowable exceedances (99.79th percentile of hours/year)
Particulate Matter (PM_{10})	Annual mean	40 µg/m^3	No exceedances allowed
	Daily mean	50 µg/m^3	35 allowable exceedances (99.41st percentile of days/year)

POLLUTANT	AVERAGING PERIOD	IRISH AIR QUALITY STANDARD/ EU LIMIT VALUE	ALLOWABLE EXCEEDANCE
Fine particulate Matter ($PM_{2.5}$)	Annual mean	20 µg/m^3	No exceedances allowed
Carbon Monoxide (CO)	Rolling 8-hour maximum	10,000 µg/m^3	No exceedances allowed
Oxides of Nitrogen (NO_X) – for the protection of ecosystems	Annual mean	30 µg/m^3	No exceedances allowed
Convention on Long-Range Transboundary Air Pollution Critical Loads			
Nutrient Nitrogen deposition	Annual	Habitat specific Critical Loads[1]	No exceedances allowed
Acid Deposition	Annual	Habitat specific Critical Loads[1]	No exceedances allowed
Notes: 1 See ES Appendix 7A (EIAR Volume II) for habitat specific Critical Loads.			

Industrial Emissions Directive (IED)

7.3.4 The installed aggregated thermal capacity of the Proposed Development will exceed 50MW. As such, its operations will fall within the remit of the EU's Industrial Emissions Directive (2010/75/EU). The primary aims of the Industrial Emissions Directive are to prevent or reduce pollution from industrial activities, to reduce waste and to promote energy efficiency. The Directive applies to all large industrial installations and to power plants which are above a certain size threshold. The Directive will apply to the applicable combustion plant associated with the Proposed Development.

7.3.5 The EPA is the statutory body for the regulation of an Industrial Emissions Licence (IEL). The operator will be required to obtain an IEL from the EPA for the proposed CCGT & OCGT Power Plant; this would be as a new licence. Licences are determined having regard to the principle of Best Available Techniques (BAT), which, in turn, is based on the Best Available Techniques Reference Documents ("BREF" documents) developed and published by the European Commission. The EU has prepared a series of reference documents for different industrial activities, which define BAT for each activity.

Relevant Environmental Legislation

7.3.6 Other national legislation that relates to air quality and is of relevance to this assessment is listed follows:

- European Union (Environmental Impact Assessment) (Environmental Protection Agency Act 1992) (Amendment) Regulations 2020, S.I. No. 191 of 2020;
- European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015 S.I. No. 355/2015;
- European Union (Industrial Emissions) Regulations 2013 S.I. 138 of 2013;

- Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013 S.I. 137 of 2013;
- Environmental Protection Agency (Industrial Emissions) (Licensing) (Amendment) Regulations 2020 (S.I. 190 of 2020); and
- European Communities (Birds and Natural Habitats) Regulations 2011.

Planning Policy Context

National Planning Policy

7.3.7 Project Ireland 2040 is the Government's long-term overarching strategy for future development and infrastructure in Ireland. It consists of several documents, including the National Planning Framework (Government of Ireland, 2018), which is the Government's high-level strategic Plan for shaping the future growth and development of Ireland up to 2040.

7.3.8 The National Planning Framework includes the following overarching aim that is relevant to this assessment:

> *"Creating a Clean Environment for a Healthy Society:*
>
> *…Promoting Cleaner Air: Addressing air quality problems in urban and rural areas through better planning and design."*

7.3.9 The National Planning Framework includes National Policy Objective 64, which stresses the importance of improving ambient air quality:

> *"National Policy Objective 64: Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions."*

7.3.10 Project Ireland 2040 also includes the Government's National Development Plan (Government of Ireland, 2018). This document is focused on Ireland's long-term economic, environmental, and social progress up to 2027, and references improvements in air quality as an additional benefit to improving energy efficiency for the primary purpose of reducing carbon emissions.

7.3.11 The air quality assessment described in this chapter will demonstrate whether or not the emissions associated with the construction, operation and decommissioning of the Proposed Development contravene the relevant aims and objectives of Project Ireland 2040.

Local Planning Policy

7.3.12 This section describes the local development plan policies of relevance to the Proposed Development. Part II of the Planning and Development Act (2000), as amended (hereafter referred to as 'The Act') requires that where, in making any determination under The Act, regard needs to be given to the local development plan, the determination must be made in accordance with the plan unless material considerations indicate otherwise.

7.3.13 The local development plan policy context is contained within the Offaly County Development Plan (CDP) 2021 – 2027 and the Westmeath County Development Plan 2021-2027.The following policies and paragraphs are relevant to this Chapter:

- **Offaly CDP, BLO-05**: It is an objective of the Council in accordance with Article 4(4) of the Birds Directive and Regulation 27(4) of the European Communities (Birds and Habitats) Regulations 2011-2015 to strive to avoid pollution or deterioration of bird habitats outside Special Protection Areas;
- **Offaly CDP, Chapter 11, paragraph 11.5.6 Air Quality:** Air pollution can negatively affect human health and eco-systems. EU Directives set out air quality standards in Ireland and other member states for a wide variety of pollutants. The Environmental Protection Agency (EPA) is responsible for monitoring air quality in Ireland. The EPA's Air Quality Index for Health describes air quality in the Offaly region as 'Good'. The policy approach of the Council is to integrate land use planning and transport and promote measures which seek a reduction in fossil fuel-based energy sources to reduce air pollution, particularly targeting emissions from vehicles and home heating. Local authorities, through the planning system, can also help minimise the adverse effects of air pollution associated with the construction and operational phases of projects through conditions attached to planning permissions.
- **Offaly CDP, ENVP-17**: It is Council policy to manage air quality in accordance with relevant legislation and policy;
- **Offaly CDP, ENVP-18:** It is Council policy to promote the preservation of best ambient air quality compatible with sustainable development in accordance with the EU ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) and ensure that all air emissions associated with new developments are within Environmental Quality Standards as set out in the Air Quality Standards Regulations 2011, or any updated/superseding documents;
- **Offaly CDP, ENVP-19:** It is Council policy to require activities likely to give rise to air emissions to implement measures to control such emissions and to undertake air quality monitoring. Application of this policy will take into account instances whereby activities are licensed by other bodies through other processes (such as Integrated Pollution Control Licensing or Industrial Emissions Licensing);
- **Offaly CDP, ENVP-24:** It is Council policy to assess, as relevant, proposals for development in terms of, inter alia, potential impact on existing adjacent developments, existing land uses and/or the surrounding landscape. Where proposed developments would be likely to have a significant adverse effect on the amenities of the area through pollution by noise, fumes, odours, dust, grit or vibration, or cause pollution of air, water and/or soil, mitigation measures shall be introduced in order to eliminate adverse environmental impacts or reduce them to an acceptable operating level. Application of this policy will take into account instances whereby activities are licensed by other bodies through other processes (such as Integrated Pollution Control Licensing or Industrial Emissions Licensing);
- **Offaly CDP, ENVO-09**: It is an objective of the Council to reduce harmful emissions and achieve and maintain good air quality for the county;
- **Offaly CDP, ENVO-10**: It is an objective of the Council to actively promote measures to reduce air pollution and combat climate change including promotion of energy efficient buildings, cleaner home heating, green infrastructure, active and public transport modes, electric vehicles and innovative design solutions;
- **Offaly CDP, ENVO-11**: It is an objective of the Council to promote sustainable design and construction to help reduce emissions from the demolition and construction of buildings;

- **Offaly CDP, ENVO-12**: It is an objective of the Council to work with relevant agencies to support local data collection in the development of air quality monitoring;
- **Westmeath CDP, CPO 7.14:** Require the incorporation of adaptable multi-functional and sensitive design solutions that supports the transition to low carbon, carbon resilient, sustainable and attractive environments;
- **Westmeath CDP, CPO 10.130:** Promote the preservation of best ambient air quality compatible with sustainable development in accordance with the EU Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/5/0/EC) and ensure that all air emissions associated with new developments are within Environmental Quality Standards as out in the Air Quality Standards Regulations 2011 (SI No. 180 of 201) (or any updated / superseding documents);
- **Westmeath CDP, CPO 10.131:** It is a strategic aim of the county to reduce polluting emissions and support the implementation of measures to improve indoor and outdoor air quality by:
  - Participating in, and facilitating national programmes of air quality monitoring;
  - Supporting the development and promotion of the Air Quality Index for Health;
  - Supporting the development of Local Air Quality Management Plans that identify pollution 'hot spots' and aim to reduce pollution through local action on emissions; and
  - Assessing radon levels in indoor settings in council properties and support the promotion of radon testing all indoor settings; and
- **Westmeath CDP, CPO 10.146:** Ensure that proposals for energy development demonstrate that human health has been considered, including those relating to the topics of Air Quality.

7.4 Baseline Environmental Conditions and Constraints

Overview

7.4.1 The baseline data presented in this section covers the whole study area: the Power Plant Area, the Electricity Grid Connection, the Gas Connection Corridor and the surrounding land.

Sensitive Receptors

Construction Dust

7.4.2 During the construction phase of the Proposed Development and Overall Project, based on the distances set out in IAQM guidance (IAQM, 2023), receptors potentially affected by dust soiling and short-term concentrations of PM_{10} generated during construction activities are limited to those located within 250m of the nearest construction activity, and/ or within 50m of a public road used by construction traffic that is within 250m of the construction site entrances. Ecological receptors are limited to those located within 50m of the nearest construction activity and/ or within 50m of a public road used by construction traffic that is within 250m of the construction site entrance.

7.4.3 There are no human health and amenity receptors falling into those screening distances within 250 m of the Power Plant site or the access point. Further consideration of the effect of fugitive dust and particulate matter emissions from construction operations at the Power Plant site, on amenity and human health, has not therefore been carried out.

7.4.4 At the southern end of the Electricity Grid Connection underground cable route, there are some residential properties within 50m of the Site boundary. Along the length of the Gas Connection Corridor, there are residential properties within 250 m of the centre line of the Corridor, although the construction activities nearby will largely be limited to the installation of the buried pipeline.

7.4.5 There won't be any construction work within 50m from any designated ecological receptors for the Proposed Development or Overall Project.

Operation

7.4.6 Human receptors are selected for the operational phase to represent the locations where the highest effects are anticipated to occur. For an installation of this size, it is considered highly likely that these effects will occur at the most proximal locations: therefore, these locations can be representative of the highest exposure of any human receptor. In the case of road traffic emissions, this would be locations adjacent to affected traffic routes, while for combustion emissions it would be the nearest sensitive locations in all directions from the point of release.

7.4.7 Ecological receptors with potential sensitivities to pollutants associated with the operational phase have been selected within a 15km radius of the installation for Internationally designated sites and 2km for locally designated ones.

7.4.8 Deposition of nutrient nitrogen and acid to waterbodies and watercourses has not been considered as these types of receptors are not considered to be at risk from such emissions. Watercourses such as rivers are bodies of water which are constantly moving systems, with fresh water flushing out any dissolved air quality contaminants even if they were present in high concentrations, which is not the case for the Proposed Development and Overall Development. On that basis, it is not possible for any air quality contaminants to become dissolved and accumulate in the water to elicit a response from the aquatic habitat.

Selected Sensitive Receptors

7.4.9 Identified receptors are detailed in **Table 7.6** below for the operational phase. The locations of human receptors are shown on Figure 7.1. Ecological receptors are shown in Figure 7.2. The impact of emissions from the Power Plant Area emissions stack have been predicted at all of the selected receptors. A number of receptors are also adjacent to roads which could be affected by the change in traffic associated with the construction of the Proposed Development and Overall Project; where this is the case, these receptors have also been included in the road traffic modelling to enable the change in NO_2, PM_{10} and $PM_{2.5}$ concentrations to be predicted.

Table 7.6: Selected Sensitive Receptors

ID	RECEPTOR DESCRIPTION	RECEPTOR TYPE	ITM GRID REFERENCE		DIST FROM STACK (M)	ASSESSED FOR IMPACTS FROM:
			X	Y		
R01	Property on the R400 in Rochfortbridge	Residential	646674	740506	3641	Operational, Construction Dust and Construction Traffic
R02	Property on the R400 south of M6	Residential	647811	739607	2193	Operational, Construction Dust and Construction Traffic
R03	Property on the R400 south of M6	Residential	647896	739416	2013	Operational, Construction Dust and Construction Traffic
R04	Property on the R400 south of site entrance	Residential	650417	737275	1302	Operational and Construction Traffic
R05	Property on the R400 near Yellow River	Residential	651734	736015	3125	Operational and Construction Traffic
R06	Property on the R400 north of Rhode	Residential	652790	735094	4524	Operational and Construction Traffic
R07	Property on L1010 Togher, west Rhode	Residential	652261	732837	6031	Operational
R08	Property on a farm north of Croghan	Residential	647987	736196	2507	Operational
R09	Property on a farm Rathconnel	Residential	653895	740026	4588	Operational
R10	Property in Hardwood	Residential	650972	742398	4254	Operational
R11	Property on Rahanine Rd	Residential	647852	740562	2819	Operational
R12	Property on a farm, south of M6	Residential	646923	739040	2709	Operational, Construction Dust

ID	RECEPTOR DESCRIPTION	RECEPTOR TYPE	ITM GRID REFERENCE		DIST FROM STACK (M)	ASSESSED FOR IMPACTS FROM:
			X	Y		
R13	Property on the L1009	Residential	651418	737943	1848	Operational
R14	Property in Farthingstown, south of M6	Residential	646521	739046	3094	Construction Traffic
S01	Rhode Community Pre-school	School	653135	733457	5975	Operational and Construction Traffic
S02	Rhode N.S. School	School	653421	732449	6959	Operational
S03	Scoil Bhride, Croghan P.S., School	School	648075	732508	5864	Operational
S04	St Joseph's Secondary, Rochfortbridge, School	School	646457	740659	3906	Operational and Construction Traffic
S05	Miltownpass National School	School	649972	743861	5507	Operational
S06	Stonebridge Park Playschool, Rochfortbridge	School	647048	740980	3667	Operational
E1	Raheenmore Bog SAC	Ecological	644515	732937	7246	Operational
E2a	Split Hills and Long Hill Esker SAC	Ecological	638528	735357	11331	Operational
E2b	Split Hills and Long Hill Esker SAC	Ecological	638112	736103	11577	Operational
E2c	Split Hills and Long Hill Esker SAC	Ecological	636231	737637	13278	Operational
E3a	Lough Ennell SAC	Ecological	638953	742566	11414	Operational
E3b	Lough Ennell SAC and SPA	Ecological	639983	744758	11558	Operational
E3c	Lough Ennell SAC	Ecological	641577	744896	10360	Operational
E3d	Lough Ennell SAC	Ecological	641495	746150	11252	Operational
E3e	Lough Ennell SAC and SPA	Ecological	642105	748907	12945	Operational
E4	Mount Hevey Bog SAC	Ecological	659975	747758	13981	Operational
E5	Wooddown Bog SAC	Ecological	648907	753667	15318	Operational

Existing Air Quality

7.4.10 The existing environment has been described with reference to the most recently published EPA Air Quality Report and supplementary data (EPA, 2022).

7.4.11 The EPA manages the national ambient air quality network, which consists of 116 monitoring stations as of 2022, located across the country that monitor a range of pollutants, including some of those of relevance to this assessment. The most recent EPA Air Quality Report available was published in 2022 and refers to monitoring data gathered in 2021 and earlier.

7.4.12 EU legislation on air quality requires that Member States divide their territory into zones for the assessment and management of air quality. The zones in place in Ireland during the most recently available report of monitoring (EPA, 2022) are:

- Zone A – Dublin conurbation;
- Zone B – Cork conurbation;
- Zone C – large towns with a population >15,000; and
- Zone D – the remaining area of Ireland.

7.4.13 Data gathered by the nearest air quality monitoring undertaken to the Site is summarised in **Table 7.7**. Data from EPA Baseline reports - Air quality in Ireland (2018 – 2021) is also presented as the average across the representative Zone D sites.

Table 7.7: Air Quality Monitoring Data

MONITORING STATION	POLLUTANT	REPORTED CONCENTRATION (µg/m³)[1]				AIR QUALITY STANDARD (µg/m³)
		2018	2019	2020	2021	
Zone D Average[5]	NO_2	4.7	5.7	4.0	7.3	40[2]
	NO_X	6.7	7.8	5.4	14.5	30[3]
	PM_{10}	10.7	12.3	11.9	11.6	40[2]
	$PM_{2.5}$	7.5	9.3	8.3	7.9	25[2]
	CO[4]	400 (0)[6]	100 (0)	400 (0)[6]	300 (0)	10,000[2]

Notes:

1 Values as reported by the EPA in the Supplementary Tables to Support the annual Air Quality in Ireland reports.

2 For the protection of human health.

3 For the protection of ecosystems (nature conservation receptors).

4 Rolling 8-hour average – number of exceedances of the rolling 8-hour maximum Air Quality Standard provided in parenthesis).

5 Zone D average data discounts sites with data capture of <50%.

6 Average for Zone C – no Zone D data available.

7.4.14 The EPA data summarised in **Table 7.7** above demonstrates that the existing airshed in the vicinity of the Site is unlikely to be impacted as concentrations are generally well below the respective Air Quality Standards and Environmental Assessment Levels for the protection of human health and ecosystems.

7.4.15 Monitored annual mean NO_X concentrations reported by the EPA for Zone D suggest that nature conservation sites considered in this assessment are not currently at risk of being impacted by the pollutants associated with harm to ecosystems.

AECOM Project Specific Monitoring

7.4.16 To provide further detail on the variation in background NO_2 concentrations throughout the study area, a project specific diffusion tube survey was undertaken around the Proposed Development.

7.4.17 Results presented below are based on measurements realised between the 9 of March 2023 and the 27 of June 2023. The survey was completed at the end of August but at the time of writing this report results have not been received back from the laboratory. The results from the survey were annualised to 2022 in line with the methodology set out in LAQM.TG (16) (Defra, 2016). The year 2022 has been used as the last full calendar

year. The results of the survey are shown in **Table 7.8.** The raw monitoring data is located in Annex C, Appendix 7A (refer to EIAR Volume II). Monitoring data was annualised using data from the Emo Court, Edenderry and Kilkenny monitoring stations. Data for these sites was sourced from the airquality.ie website, operated by the EPA (EPA, 2023).

Table 7.8: AECOM NO_2 Diffusion Tube Concentrations Monitored in 2023 and Annualised to 2022

SITE ID	GRID REF OS (M)	SITE TYPE	PERIOD MEAN CONCENTRATION (µg/m³)						BIAS ADJUSTED ANNUALISED MEAN (µg/m³)
			Mar	Apr	May	June	July	Aug	
DT1	50550,401173	Roadside	5.5	5.3	5.8	5.8	4.1	3.6	5.9
DT2	51078,400677	Roadside	8.4	8.3	8.1	8.9	8.6	6.4	9.6
DT3	53992,397531	Roadside	8.0	11.1	11.9	14.5	Road closed near tube	Road closed near tube	11.2
DT4	54116,396987	Roadside	9.6	8.8	8.9	9.7	Road closed near tube	Road closed near tube	9.1
DT5	50145,401566	Roadside	6.4	8.9	10.6	12.0	Web/other in tube	5.9	9.4
DT6	50025,401713	Roadside	9.6	9.6	13.0	12.4	Web/other in tube	8.5	11.4
DT7	49099,402827	Roadside	7.0	7.3	9.5	8.2	6.2	6.2	8.8
DT8	49144,402633	Roadside	Web/other in tube	10.0	12.8	11.8	7.4	6.3	11.7
DT9	48188,402481	Roadside	6.9	9.1	11.7	12.3	7.0	Web/other in tube	10.5
DT10	48446,403356	Roadside	6.9	7.8	6.4	Tube on floor	7.6	5.8	8.2
DT11	59036,403232	Roadside	Missing	Missing	8.8	10.6	8.2	5.8	10.7
DT12	54366,396965	Background	5.0	4.6	3.9	5.1	Missing	6.5	5.4
DT13	48145,403670	Background	4.0	4.1	3.1	3.8	2.4	Web/other in tube	3.9

7.4.18 The project specific NO_2 measurement results are all well below the annual mean NO_2 objectives. The annual mean NO_2 concentrations measured along the local roads (DT1 to DT11) are low at one third or less of the air quality standard value.

Background Concentrations

7.4.19 The background pollutant concentrations used to inform this assessment have been obtained from the most recent Air Quality in Ireland report published by the EPA (2022) and diffusion tube measurements. With most the 6 months survey complete, the average annualised NO_2 concentration measured at background locations (DT12 and DT13) has been used as a representative measurement of the local background option. All other pollutant concentrations were sourced from publicly available data.

7.4.20 The background pollutant concentration data is listed in **Table 7.8.** For pollutants with averaging periods of less than the annual mean, it is standard practice to assume the background concentration is the annual mean (long-term) value doubled, which is in line with EPA guidance (2020). Background nitrogen and acid deposition values, and ammonia concentrations were sourced from the APIS website (APIS, 2023). For the other pollutants, the latest version of the EPA report has been used and values for Zone D for 2021 were selected as the latest year.

Table 7.9: Background Pollutant Concentrations

POLLUTANT	AVERAGING PERIOD	RURAL CONCENTRATION (µg/m^3 UNLESS STATED)
Nitrogen dioxide (NO_2)	Annual mean	4.6
	Hourly mean	9.2
Carbon monoxide (CO)	Rolling 8-hour mean	300
Particulate matter (PM_{10})	Annual mean	11.6
	Daily mean	11.6
Fine particulate matter ($PM_{2.5}$)	Annual mean	7.9
Oxides of nitrogen (NO_X) – for the protection of ecosystems	Annual mean	Site specific, see result section
Nitrogen deposition	Annual mean	Site specific, see result section
Acid deposition	Annual mean	Site specific, see result section
Ammonia	Annual mean	Site specific, see result section

Baseline

7.4.21 Baseline annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$, and the number of expected exceedances of the 24-hour 50µg/m^3 PM_{10} air quality objectives at the receptors sensitive to changes in road traffic emissions during the current 2022 baseline scenario are listed in **Table 7.10** below.

Table 7.10: Air Quality Statistics for Baseline Scenario in 2022

ID	RECEPTOR NAME	ANNUAL MEAN POLLUTANT CONCENTRATION (µg/m^3)			NUMBER OF DAYS OF EXCEEDANCE OF 24-HOUR MEAN OF 50 µg/m^3 (DAYS)
		NO_2	PM_{10}	$PM_{2.5}$	
R01	Property on the R400 in Rochfortbridge	7.7	12.0	8.1	1
R02	Property on the R400 south of M6	10.5	12.2	8.3	1

ID	RECEPTOR NAME	ANNUAL MEAN POLLUTANT CONCENTRATION (µg/m^3)			NUMBER OF DAYS OF EXCEEDANCE OF 24-HOUR MEAN OF 50 µg/m^3 (DAYS)
		NO_2	PM_{10}	$PM_{2.5}$	
R03	Property on the R400 south of M6	8.3	12.0	8.1	1
R04	Property on the R400 south of site entrance	8.2	12.1	8.2	1
R05	Property on the R400 near Yellow River	7.1	12.0	8.1	1
R06	Property on the R400 north of Rhode	9.6	12.3	8.4	1
R14	Property in Farthingstown, south of M6	6.8	11.8	8.0	1

7.4.22 In the Baseline scenario the annual mean concentrations of all pollutants near to main roads in the vicinity of the Site are well below the environmental standards, indicating that air quality in the area around the Site is of a very good standard.

Evolution of Receiving Baseline Environment

7.4.23 Predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$, and the number of exceedances of the 24-hour 50 µg/m^3 PM_{10} air quality objective, at the selected receptors during the receiving 2024 baseline environment scenario for the Proposed Development and Overall Project are listed in **Table 7.11**. As described at paragraph 7.2.22 the traffic flows used for the future baseline scenario include other committed developments.

Table 7.11: Air Quality Baseline Statistics for 2025 Baseline Scenario (including other committed developments)

ID	RECEPTOR NAME	ANNUAL MEAN POLLUTANT CONCENTRATION (µg/m^3)			NUMBER OF DAYS OF EXCEEDANCE OF 24-HOUR MEAN OF 50 µg/m^3 (DAYS)
		NO_2	PM_{10}	$PM_{2.5}$	
R01	Property on the R400 in Rochfortbridge	7.1	12.0	8.1	1
R02	Property on the R400 south of M6	9.4	12.2	8.3	1
R03	Property on the R400 south of M6	7.6	12.0	8.2	1
R04	Property on the R400 south of site entrance	7.5	12.2	8.3	1
R05	Property on the R400 near Yellow River	6.6	12.0	8.1	1
R06	Property on the R400 north of Rhode	8.6	12.4	8.4	1
R14	Property in Farthingstown, south of M6	8.6	12.0	8.1	1

7.4.24 The evolution of the baseline receiving environment scenario for the pollutant concentrations is well below all AQS values for all pollutants, indicating that air quality in the vicinity of the Site will continue to be of a very good standard. Compared to 2022,

slightly higher concentrations of NO_2 are predicted alongside the M6, though still within the AQS objective values.

7.5 Predicted Impacts

Do-Nothing Scenario

7.5.1 If the Proposed Development and Overall Project does not go ahead, current air quality conditions, as set out in Section 7.4, would continue to prevail. There would be no additional change to air quality.

7.5.2 If the Proposed Development and Overall Project were not to proceed, environmental monitoring and site management would continue, as required under the conditions of the IPC Licence (P0501-01).

7.5.3 If the Proposed Development and Overall Project were not to proceed, the opportunity for a project that can respond to the national electricity demands and provide a security of power supply to complement the growing installed levels of intermittent renewable generation as part of net zero transition, (including anticipated growth in energy demand from energy intensive industries and the electrification of heat and transport) would be lost. The requirement to replace conventional and aging generation plant with higher efficiency, flexible, lower carbon technology and the opportunity to generate associated local employment and investment and diversify the local economy would be lost. Furthermore, the opportunity to meet EirGrid requirements for a looped-in substation to the Oldstreet – Woodland 400 kV circuit in the eastern Midlands would also be lost.

Impact Assessment for Power Plant Area

Construction Phase

Impacts on Amenity

7.5.4 The assessment of air quality effects on amenity forms part of the Assessment of Construction Dust as the change relative to baseline conditions would take the form of, the perception of changes in dust deposition rates or the direct impact of dust deposition on property. Given the large distances from the site boundary and the even larger distance from dust generating activities effects on amenity are **unlikely** and should they occur would be **brief**, **infrequent**, and **reversible** with the proposed measures in place to minimise emissions at source.

Assessment of Construction Dust

7.5.5 Receptors potentially affected by dust soiling and 24-hour mean concentrations of PM_{10} generated during construction activities are limited to those located within 250m of the nearest construction activity, and/ or within 50m of a public road used by construction traffic that is within 250m of the construction site entrances. Ecological receptors are limited to those located within 50m of the nearest construction activity and/ or within 50m of a public road used by construction traffic that is within 250m of the construction site entrance.

7.5.6 There are no human health, amenity or ecological receptors falling into those screening distances within 250 m of the Power Plant Area site or the access point. Further consideration of the effect of fugitive dust and particulate matter emissions from construction operations at the Power Plant Area site, has not therefore been carried out as if can be concluded with confidence that significant effects would be unlikely and should they occur would be **brief**, **infrequent** and **reversible** with the proposed measures in place to minimise emissions at source.

Assessment of Construction Traffic

7.5.7 Predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$, and the number of exceedances of the 24-hour 50µg/m^3 PM_{10} air quality objective at the selected existing receptors in the 2025 Construction scenario are listed in **Table 7.12.**

Table 7.12: Air Quality Statistics Predicted for 2025 Construction Scenario

ID	RECEPTOR NAME	ANNUAL MEAN POLLUTANT CONCENTRATION (µg/m³)			NUMBER OF DAYS OF EXCEEDANCE OF 24-HOUR MEAN OF 50µg/m³ (DAYS)
		NO_2	PM_{10}	$PM_{2.5}$	
R01	Property on the R400 in Rochfortbridge	7.2	12.0	8.1	1
R02	Property on the R400 south of M6	9.8	12.3	8.3	1
R03	Property on the R400 south of M6	8.0	12.1	8.2	1
R04	Property on the R400 south of site entrance	7.9	12.3	8.3	1
R05	Property on the R400 near Yellow River	6.9	12.1	8.2	1
R06	Property on the R400 north of Rhode	9.1	12.6	8.5	1
R14	Property in Farthingstown, south of M6	8.7	12.0	8.2	1

7.5.8 Predicted pollutant concentrations in the 2025 Construction scenario show that concentrations of all pollutants are below all environmental standard values for all pollutants, indicating that air quality in the vicinity of the Site remains of a good quality.

7.5.9 The changes in air quality statistics between the 2025 receiving baseline environment and 2025 Construction scenarios are shown in **Table 7.13.**

Table 7.13: Air Quality Impacts Predicted for 2025 Construction Scenario

ID	RECEPTOR NAME	ANNUAL MEAN POLLUTANT CONCENTRATION (µg/m³)			CHANGE IN NUMBER OF DAYS OF EXCEEDANCE OF 24-HOUR MEAN OF 50µg/m³ (DAYS)
		NO_2	PM_{10}	$PM_{2.5}$	
R01	Property on the R400 in Rochfortbridge	0.1	<0.1	<0.1	<1
R02	Property on the R400 south of M6	0.4	0.1	0.1	<1
R03	Property on the R400 south of M6	0.4	0.1	0.1	<1
R04	Property on the R400 south of site entrance	0.4	0.1	0.1	<1
R05	Property on the R400 near Yellow River	0.3	0.1	<0.1	<1
R06	Property on the R400 north of Rhode	0.5	0.2	0.1	<1
R14	Property in Farthingstown, south of M6	0.2	<0.1	<0.1	<1

7.5.10 The magnitude of the change in pollutant concentrations due to construction traffic on the road network associated with the Proposed Development and Overall Project is predicted to be negligible or low for all pollutants at all receptor locations. A change of this magnitude is considered (see paragraph 7.2.47 and below) to have an imperceptible **unlikely** effect as the long-term averaging concentrations at all receptors are less than 75% of the Standard. The unlikely effect would be **short-term** as they are limited to the duration of the construction phase of the project.

Operational Phase

Industrial Emissions Directive (IED) / Best Available Techniques (BAT)-Associate Emission Level (AEL) Emission Limit Value (ELV) Compliance

7.5.11 The Power Plant Area will be designed and operate such that process emissions to air comply with the ELV requirements specified in the IED and BAT for Large Combustion Plant (CID, 2021), as set out in Section 4.3 of **Appendix 7A**. The operation of the Power Plant Area will be regulated by EPA through the Industrial Emissions Licence (IEL) required for the operation of the Power Plant Area as required per activity threshold outlined in Class 2.1 of the First Schedule of the EPA Act as amended.

Emissions Stack Height

7.5.12 The emissions stack height for the proposed CCGT stack has been determined as 60m above finished ground level, in order to provide appropriate dispersion of the emitted pollutants. The height of the proposed OCGT stack has been determined as 45m above finished ground level.

7.5.13 An analysis of the effect of varying stack height on ground level impacts has been included in Section 7 of **Appendix 7A** in EIAR Volume II. Emissions from the stacks have been modelled at a range of heights in order to select a height that will allow a balance between a release height sufficient to achieve adequate dispersion of pollutants and other constraints such as visual impact.

Impacts on Human Health

7.5.14 The pollutants considered within the assessment of emissions from the CCGT & OCGT emissions stacks are primarily those prescribed within the IED (European Commission, 2010). These are:

- NO_x, expressed as NO_2 in the case of human health, or NO_x in the case of ecological impacts; and
- Carbon monoxide (CO).

7.5.15 In addition to the pollutants prescribed by the IED, emissions of ammonia from the SCR abatement fitted to the CCGT have also been considered.

7.5.16 The impact of point source emissions at human health receptors has been determined from isopleth figures of pollutant dispersion and the model output for the selected discrete receptor locations.

7.5.17 The maximum rolling 8-hour mean CO, the 99.79^{th} hourly percentile NO_2, and annual mean NO_2 and NO_x predicted concentrations have been compared with the AQS values, as summarised in Table 7.14 to Table 7.17 below; the full set of dispersion modelling results are provided in Appendix 7A in EIAR Volume II. Isopleth figures showing the annual and hourly mean PC of NO_2 are provided in Figures 7.4 to 7.6 of this chapter.

7.5.18 The assessment has been undertaken for the Power Plant Area opening year scenario (2027).

7.5.19 The dispersion modelling includes a number of conservative assumptions in combination, including:

- Use of the five years of meteorological data modelled for the emissions stack emissions, covering the full range of meteorological conditions at the Power Plant Area site;
- Operation of the plant at the proposed IED or BAT-AEL emissions limits, whichever is lower (in practice the actual operational emissions will have to be lower than these limits in order to ensure that the limits are adhered to); and
- Conservative estimates of background concentrations at the sensitive receptors.

7.5.20 The Power Plant Area will have the ability to operate 24 hours a day, seven days a week. It is noted however that, whilst the Power Plant Area has the potential to operate in this manner, in reality it is expected to operate for a lower number of hours per year. On a precautionary basis, therefore, the annual mean results have been based on an assumed continuous operation. Short-term results have also been based on continuous operation throughout the year, in order to ensure meteorological conditions that represent the full range of conditions within the study area are taken into account.

7.5.21 The following abbreviations are used in tables below:

- PC: this is the Process Contribution and represents the change caused by the Proposed Development;
- PEC: this is the Predicted Environmental Concentration and is the PC plus background concentration. It is the concentration expected at a particular receptor once the effect of the Proposed Development is taken into account; and
- AQS: the relevant national air quality standard or environmental standard.

Table 7.14: Power Plant Area - Annual Mean NO_2 Results at Location of Maximum Predicted Impact and Most Affected Sensitive Receptor

CASE DESCRIPTION	AIR QUALITY STANDARD (AQS) ($\mu g/m^3$)	PROCESS CONTRIBUTION (PC) ($\mu g/m^3$)	PC/AQS (%)	BACKGROUND ($\mu g/m^3$)	PREDICTED ENVIRONMENTAL CONCENTRATION (PEC) ($\mu g/m^3$)	PEC/AQS (%)	EFFECT DESCRIPTOR
Full Load Continuous Operation, natural gas fuel							
Maximum Anywhere (X649893, Y738765) NE of CCGT emissions stack	40	1.0	2.6%	4.6	5.6	14.1%	Imperceptible
Most affected receptor (R13, residential property on the L1009)		0.3	0.6%	4.6	4.9	12.1%	Imperceptible

Table 7.15: Power Plant Area - 99.79th Percentile 1-Hour NO_2 Results at Location of Maximum Predicted Impact and Most Affected Sensitive Receptor

CASE DESCRIPTION	AIR QUALITY STANDARD (AQS) (µg/m³)	PC (µg/m³)	PC/AQS (%)	BACKGROUND (µg/m³)	PREDICTED ENVIRONMENTAL CONCENTRATION (PEC) (µg/m³)	PEC/AQS (%)	EFFECT DESCRIPTOR
Full Load Continuous Operation, natural gas fuel							
Maximum (X649768, Y738590) NE of CCGT emissions stack	200	49.5	24.7%	9.2	58.7	29.3%	Not Significant[A]
Most affected receptor (R13, residential property on the L1009)		7.7	3.8%		16.9	8.4%	Imperceptible
Low Load, natural gas fuel							
Maximum (X649743, Y738515) NE of CCGT emissions stack	200	67.6	33.8%	9.2	76.8	38.4%	Not Significant [A]
Most affected receptor (R13, residential property on the L1009)		6.0	3.0%		15.2	7.6%	Imperceptible
Backup fuel (full load operation)							
Maximum (X649768, Y738615) NE of CCGT emissions stack	200	322.2	161.1%	9.2	331.4	165.7%	Significant[A].
Most affected receptor (R13, residential property on the L1009)		48.9	24.4%		58.1	29.0%	Slight

A - no relevant receptor at or near to this location.

Table 7.16: Power Plant Area - Maximum predicted 8-hour Rolling CO Results at Location of Maximum Predicted Impact and Most Affected Sensitive Receptor

CASE DESCRIPTION	AIR QUALITY STANDARD (AQS) (µg/m^3)	PC (µg/m^3)	PC/AQS (%)	BACKGROUND (µg/m^3)	PREDICTED ENVIRONMENTAL CONCENTRATION (PEC) (µg/m^3)	PEC/AQS (%)	EFFECT DESCRIPTOR
Full Load Continuous Operation, natural gas fuel							
Maximum (X 649843, Y 738640) NE of CCGT emissions stack	10,000	64.5	0.6%	300.0	364.5	3.6%	Imperceptible
Most affected receptor (R13, residential property on the L1009)		11.7	0.1%		311.7	3.1%	Imperceptible
Low Load, natural gas fuel							
Maximum (X 649743, Y 738515) NE of CCGT emissions stack	10,000	100.8	1.0%	300.0	400.8	4.0%	Imperceptible
Most affected receptor (R13, residential property on the L1009)		8.4	0.1%		308.4	3.1%	Imperceptible
Backup fuel (emergency full load operation)							
Maximum (X 649843, Y 738640) NW of CCGT emissions stack	10,000	221.6	2.2%	300.0	521.6	5.2%	Imperceptible
Most affected receptor (R13, residential property on the L1009)		39.1	0.4%		339.1	3.4%	Imperceptible

A - no relevant receptor at or near to this location.

Table 7.17: Power Plant Area - 90.71st Percentile 24-Hour PM_{10} Results at Location of Maximum Predicted Impact and Most Affected Sensitive Receptor

CASE DESCRIPTION	AIR QUALITY STANDARD (AQS) (µg/m³)	PROCESS CONTRIBUTION (PC) (µg/m³)	PC/AQS (%)	BACKGROUND (µg/m³)	PREDICTED ENVIRONMENTAL CONCENTRATION (PEC) (µg/m³)	PEC/AQS (%)	EFFECT DESCRIPTOR
Backup fuel (emergency full load operation)							
Maximum Anywhere (X649994, Y738890) NE of CCGT emissions stack	50	1.0	2.0%	11.6	12.6	25.2%	Imperceptible
Most affected receptor (R16, residential property on the L1009)		0.1	0.2%	11.6	11.7	23.4%	Imperceptible

A - no relevant receptor at or near to this location.

7.5.22 Table 7.14 presents the model results for annual mean concentrations of NO_2. The maximum predicted PC within the model domain is 1.0 µg/m^3, such a change can be considered to be of low magnitude and when the predicted environmental concentration is taken into account, the effect is i**mperceptible.**

7.5.23 **Table 7.15** presents the model results for operating on natural gas fuel, an overall effect which is **not significant** would occur at the most impacted location within the modelled domain, although there are no relevant receptors at this location. At all relevant receptor locations the predicted change in 1 hour NO_2 concentration would cause an **imperceptible** long term effect.

7.5.24 On backup fuel, a change to 99.79th percentile 1-hour NO_2 concentrations of greater magnitude than the air quality standard is predicted in a small area near the site boundary. This is due to the conservative nature of the model inputs to the assessment, a stack NO_X concentration at the upper end of the expected range has been assumed, in reality it is likely that the selected unit will be capable of much lower emissions. The small affected area where the exceedance is predicted to occur is a location to the north-east of the Power Plant Area site boundary, in an area where members of the public would not normally be present. At the most impacted sensitive receptor the predicted change is 48.9µg/m^3 or 24.4% of the 1 hour NO_2 air quality standard, when the Power Plant is operating at full load with secondary fuel. At the most impacted receptor the effect would be **slight** and at other receptors located further from the site boundary it would be **imperceptible**.

7.5.25 **Table 7.16** presents the model results for 8-hour rolling CO concentrations, the effect of the change in concentration are considered to be imperceptible throughout the modelled domain, for all the operating modes and fuels assessed.

7.5.26 **Table 7.17** presents the model results for 90.71st percentile 24-hour PM_{10} concentrations. When operating on backup fuel, an effect which is imperceptible w at all locations throughout the modelled domain.

7.5.27 Given the worst-case assumptions made in the assessment, the magnitude of the predicted changes and the predicted NO_2 and CO environmental concentrations within the Power Plant Area, it is considered **unlikely** that the Power Plant Area will interfere with policies or plans in place to bring about sustained achievement of the AQS values. The overall effect of changes in NO_2 and CO concentrations due to emissions from the Power Plant Area is considered to be not significant.

Impacts on Ecological Receptors

7.5.28 The impact of PC of point source emissions at ecological receptors has been determined from the maximum model output at discrete receptor locations. The PC to Critical Level values (predicted from operation of the plant at BAT-AEL ELVs) have been compared with Critical Level and Critical Load values at each of the identified sensitive ecological receptors. As described before, Critical Levels are atmospheric concentrations and Critical Loads relate to the pollutant deposition on the ground.

7.5.29 The significance of effects associated with emissions from the Power Plant Area on designated nature conservation sites is discussed in Chapter 9: Biodiversity and the Screening for Appropriate Assessment report. In summary, the model predicts that the magnitude of impacts associated with emissions from the Proposed Development do not exceed the first stage screening threshold of 1% of the environmental standard for annual mean NO_X concentrations.

7.5.30 Annual mean ammonia, nutrient nitrogen and acid deposition impacts do exceed 1% of the environmental standards, however these impacts have been evaluated in Chapter 9: Biodiversity, and have been judged as an effect that is not significant.

7.5.31 The assessment concludes overall that the Power Plant Area will not give rise to significant adverse air quality effects on sensitive habitats within local SPA, SAC, Ramsar sites and NHAs.

Decommissioning Phase

7.5.32 The relevant standard control measures will be in place during any decommissioning and demolition works, and the surrounding environment and receptors at the time of decommissioning will be identified through due process and documented in a Demolition Environmental Management Plan. The predicted air quality effects of eventual decommissioning and demolition of the Power Plant Area are considered to be comparable to, or less than, those assessed for construction activities and are therefore not significant.

Impact Assessment for Electricity Grid Connection

Construction Phase

7.5.33 The area sensitive to dust soiling and PM_{10} health effects has been assessed, as detailed in **Appendix 7A in EIAR Volume II**, from the sensitivity of receptors and the proximity of the construction activities to these receptors.

7.5.34 All Ramsar sites, SPAs, SACs SACs and NHAs are further than 50m from the construction works associated with the Electricity Grid Connection. Therefore, a detailed assessment of construction dust on ecological receptors is not required.

7.5.35 The scale and nature of activities have been estimated to define the potential uncontrolled dust generation magnitude, according to the criteria outlined in **Appendix 7A (refer to EIAR Volume II).**

7.5.36 A detailed CEMP will be developed by the appointed contractor for the Electricity Grid Connection. Estimates of the likely scale of activities based on the type of structure being built, with reference to the guidance magnitude definitions in **Appendix 7A (refer to EIAR Volume I**I), have however been made for the purposes of mitigation definition.

7.5.37 The area where significant earthworks will be required are restricted to the preparation of the substation sites, which represents only a small part of the planning application area, and a corridor/zone where the buried sections of cabling would be installed. Excavated material would be utilised where possible to backfill trenches following installation of the cable in order to minimise removal of material from site.

7.5.38 According to IAQM criteria defined in Section 4.2 of **Appendix 7A**, the Electricity Grid Connection site has been classified in terms of its potential for earthworks, construction activities and trackout to generate emissions of dust as a ‘small’ site. This is due to the size of the overall area where earthworks would take place, in particular the substation site at the southern extent of the site. There would be a limited extent of excavation and cable installation works which would be carried out at any one time.

7.5.39 The period of time in which there is expected to be activity with the potential to give rise to fugitive dust emissions within the distance criteria for any receptor is likely to be limited in the case of cable trench excavations. Each sensitive receptor would not be near to the same level of construction activity at the same time, and each receptor along the route is likely to be at it’s most sensitive (i.e. at the closest to the activity) for a relatively limited period. The construction of the substations, however, would occur over a nine-month period.

7.5.40 Potential dust impacts (pre-mitigation) have been assessed based on the receptor sensitivity and distance criteria outlined in Appendix 7A (refer to EIAR Volume II) using professional judgment. The area sensitivity has been judged to be ‘low’ for dust soiling

impacts from all activities and 'low' sensitivity for human health impacts from PM_{10} releases from all activities, on account of the distance from the activity source to the receptors, the use of surrounding land and the existing low background concentration of particulates (<10 µg/m^3).

7.5.41 The potential risks from emissions from construction activities associated with the construction of the Electrical Grid Connection (i.e., not taking into account additional impact avoidance measures) have been defined with reference to the magnitude of the potential emissions and the sensitivity of the impact area, in accordance with the classification defined in **Appendix 7A**. The results are shown in **Table 7.17** below.

Table 7.17: Risk of Dust and Particulate Impacts (Pre-Mitigation) During the Construction of the Electrical Grid Connection

POTENTIAL IMPACT	RISK OF IMPACT FROM ACTIVITY			
	PRE CONSTRUCTION	EARTHWORKS	CONSTRUCTION	TRACKOUT
Dust Soiling	Low	Low	Low	Low
Human Health	Low	Low	Low	Low
Ecological	Not applicable	Not applicable	Not applicable	Not applicable

7.5.42 The level of mitigation required to reduce dust and particulates from the Electricity Grid Connection construction activities to avoid significant impacts on receptors has been determined based on the above risk assessment and indicative measures are outlined in **Table 7.18** for the Proposed Development activities.

Table 7.18: Example Mitigation for Dust and Particulate During the Construction of the Gas Connection Corridor

ACTIVITY	EXAMPLE MITIGATION BASED ON RISK LEVEL	CLASSIFICATION OF RESIDUAL RISK OF IMPACT	EFFECT DESCRIPTOR
Demolition	Low risk: Ensure appropriate water suppression is used during demolition operations; bag and remove any biological debris or dampen down such material before demolition	Negligible	Imperceptible
Earthworks	Low risk: re-vegetate earthworks and any soil stockpiles to stabilise surfaces as soon as practicable; minimise working area and use temporary cover or damping down to minimise dust formation during dry and windy conditions	Negligible	Imperceptible
Construction	Low risk: avoid mechanical roughening of concrete surfaces where possible; store sand and aggregates in bunded areas and finer materials in silos with suitable emission control systems	Negligible	Imperceptible
Trackout	Low risk: use water suppression and regular cleaning to minimise mud on road; cover vehicles leaving the site with spoil or waste materials; employ wheel wash systems at site exits; restrict unmade road access where possible	Negligible	Imperceptible

7.5.43 The application of good working practice measures and mitigation regularly employed in the construction industry, along with a CEMP, will reduce potential effects at receptors to a level of effect which is **not significant.**

Operational Phase

7.5.44 Emissions to air from the operation of the Electricity Grid Connection would be minimal and have been classified as negligible. Therefore, the effect would be **imperceptible** at all human health receptors. Accordingly, no further mitigation is required.

Decommissioning Phase

7.5.45 Decommissioning of the Electricity Grid Connection is not envisaged and has not been assessed under this EIAR as it will be managed by EirGrid once it is operational and will become an important part of the Republic of Ireland's national grid infrastructure.

Impact Assessment for Gas Connection Corridor

Construction Phase

7.5.46 The area sensitive to dust soiling and PM_{10} health effects has been assessed, as detailed in **Appendix 7A in EIAR Volume II,** from the sensitivity of receptors and the proximity of construction activities to these receptors.

7.5.47 All Ramsar sites, SPAs, SACs and NHAs are further than 50m from the construction works associated with the Gas Connection Corridor. Therefore, an assessment of construction dust on ecological receptors has been screened out.

7.5.48 The scale and nature of activities have been estimated to define the potential uncontrolled dust generation magnitude, according to the criteria outlined in **Appendix 7A (refer to EIAR Volume II).**

7.5.49 A detailed CEMP will be developed by the appointed contractor for the Gas Connection Corridor. Estimates of the likely scale of activities based on the type of structure being built, with reference to the guidance magnitude definitions **in Appendix 7A (refer to EIAR Volume II),** have however been made for the purposes of mitigation definition.

7.5.50 The area of excavation will be significantly smaller than the planning application area and restricted to a corridor/zone in the immediate vicinity of the pipeline trench. Excavated material would be utilised where possible to backfill the trench following installation of the gas pipeline in order to minimise removal of material from site.

7.5.51 According to IAQM criteria, the Gas Connection Corridor site has been classified in terms of its potential for earthworks, construction activities and trackout to generate emissions of dust as a 'small' site. This is due to the size of the overall area where earthworks would take place, in conjunction with the limited extent of excavation and pipeline installation works which would be carried out at any one time.

7.5.52 The period of time in which there is expected to be activity with the potential to give rise to fugitive dust emission within the distance criteria for any receptor is likely to be very limited. Pipeline excavation is expected to proceed at a rate of between 50-100m per day, while pipe laying is expected to be at a rate of approximately 500m per day. Each sensitive receptor would not be near to the same level of construction activity at the same time, and each receptor along the route is likely to be at it's most sensitive (i.e. at the closest to the activity) for a relatively limited period (less than a week).

7.5.53 Potential dust impacts (pre-mitigation) have been assessed based on the receptor sensitivity and distance criteria outlined in Appendix 7A (refer to EIAR Volume II) using professional judgment. The area sensitivity has been judged to be 'low' for dust soiling impacts from all activities and 'low' sensitivity for human health impacts from PM_{10}

releases from all activities, on account of the distance from the activity source to the receptors, the use of surrounding land and the existing low background concentration particulates (<10 µg/m^3).

7.5.54 The potential risks from emissions from construction activities associated with the construction of the Gas Connection Corridor (i.e., not taking into account additional impact avoidance measures) have been defined with reference to the magnitude of the potential emissions and the sensitivity of the impact area, in accordance with the classification defined in **Appendix 7A.** The results are shown in **Table 7.19** below.

Table 7.19: Risk of Dust and Particulate Impacts (Pre-Mitigation) During the Construction of the Gas Connection Corridor

POTENTIAL IMPACT	RISK OF IMPACT FROM ACTIVITY			
	PRE CONSTRUCTION	EARTHWORKS	CONSTRUCTION	TRACKOUT
Dust Soiling	Low	Low	Low	Low
Human Health	Low	Low	Low	Low
Ecological	Not applicable	Not applicable	Not applicable	Not applicable

7.5.55 The level of mitigation required to reduce dust and particulates from the Gas Connection Corridor construction activities to avoid significant impacts on receptors has been determined based on the above risk assessment and indicative measures are outlined in **Table 7.20** for the Proposed Development activities.

Table 7.20: Example Mitigation for Dust and Particulate During the Construction of the Gas Connection Corridor

ACTIVITY	EXAMPLE MITIGATION BASED ON RISK LEVEL	CLASSIFICATION OF RESIDUAL RISK OF IMPACT	EFFECT DESCRIPTOR
Demolition	Low risk: Ensure appropriate water suppression is used during demolition operations; bag and remove any biological debris or dampen down such material before demolition	Negligible	Imperceptible
Earthworks	Low risk: re-vegetate earthworks and any soil stockpiles to stabilise surfaces as soon as practicable; minimise working area and use temporary cover or damping down to minimise dust formation during dry and windy conditions	Negligible	Imperceptible
Construction	Low risk: avoid mechanical roughening of concrete surfaces where possible; store sand and aggregates in bunded areas and finer materials in silos with suitable emission control systems	Negligible	Imperceptible
Trackout	Low risk: use water suppression and regular cleaning to minimise mud on road; cover vehicles leaving the site with spoil or waste materials; employ wheel wash systems at site exits; restrict unmade road access where possible	Negligible	Imperceptible

7.5.56 The application of standard good working practice measures and mitigation regularly employed in the construction industry, along with a CEMP, will reduce potential effects at receptors to a level which is **not significant**.

Operational Phase

7.5.57 Emissions to air from the operation of the Gas Connection Corridor would be minimal and have been classified as negligible. Therefore, the effect would be **imperceptible** at all human health receptors. Accordingly, no further mitigation is required.

Decommissioning Phase

7.5.58 Decommissioning of the Gas Connection Corridor is not envisaged and has not been assessed under this EIAR as it will be managed by Gas Networks Ireland (GNI) and will become an important part of the national gas network infrastructure.

7.6 Mitigation and Enhancement Measures

Power Plant Area

Construction Phase

7.6.1 There are no human health, amenity or ecological receptors falling into the screening distances of less than 250 m from the Power Plant Area site or the access point. Emissions of dust and particulates from the construction phase of the Power Plant Area will, however, be controlled in accordance with standard good working practices regularly employed in the construction industry on sites of this type.

7.6.2 The management of dust and particulates and application of adequate mitigation measures will be enforced through embedded mitigation measures in the CEMP. A CEMP has been prepared and is included as **Appendix 5A in EIAR Volume II**.

7.6.3 Based on the assessment of the area of sensitivity to dust impacts and the likely risk of impacts arising from each of the key construction activities (demolition, earthworks, construction and trackout of material onto roads) (refer to EIAR **Appendix 7A, EIAR Volume II**), and as described in section 7.5, appropriate standard mitigation measures to be implemented during construction (good site techniques drawn from the 'low risk' site schedule in IAQM guidance) that have been identified are:

- Storage of sand and aggregates in bunded areas and storage of cement powder and fine materials in silos;
- Use of water suppression and regular cleaning, as necessary, to minimise mud on roads;
- Covering of vehicles leaving the construction site that are carrying construction waste materials (note: the transfer of any excavated material off site will be minimised);
- Employment of a wheel wash system at exits from the Site during the construction phase;
- Minimising storage duration of spoil during construction as far as is practical; and
- Prohibiting open fires on Site.

7.6.4 Good working practice measures will also be employed for the siting and operation of NRMM to control associated emissions, including:

- Minimising vehicle and plant idling as far as is practical (i.e. when not in use); and
- Locating static plant in a central area of the Site away from sensitive boundaries or receptors

Operational Phase

7.6.5 The air quality assessment of operational impacts has assumed that the ELVs to be set into the IEL will be met for the operational plant as required under the IED as amended by the revised BREF (the European Commission produces best available technique reference documents or BREF notes) and in accordance with use of BAT under the environmental permitting regime. The environmental effects from operation of the Proposed Development have been identified as not significant at all human health receptors.

7.6.6 Detailed modelling of predicted impacts at ecological receptors indicates that potential effects at ecological receptors as a result of the operation of the Power Plant Area can be screened out. Further assessment of the predicted effects at ecological receptors and the determination of the significance of these effects has therefore not been undertaken.

This assessment concludes that the Proposed Development will give rise to no significant adverse air quality effects on sensitive habitats within the local SPAs, SACs, Ramsar sites and NHAs.

7.6.7 No specific additional mitigation has therefore been identified as necessary for the operational phase of the Power Plant Area, other than the embedded mitigation measures outlined in this section.

Decommissioning Phase

7.6.8 It is expected that the mitigation measures outlined for the Construction Phase of the Power Plant Area would also be suitable to be applied to the decommissioning works. Any additional relevant measures for further mitigation will be agreed with the relevant planning authority and/or EPA (as part of site closure works) at the time.

Electricity Grid Connection

Construction Phase

7.6.9 Based on an initial assessment of the area of sensitivity to dust impacts and the likely risk of impacts arising from each of the key construction activities (demolition, earthworks, construction and trackout of material onto roads) (refer to **EIAR Appendix 7A, EIAR Volume II**), and as described in section 7.5, appropriate embedded mitigation measures to be implemented during construction (good site techniques drawn from the 'medium risk' site schedule in IAQM guidance) that have been identified are:

- Storage of sand and aggregates in bunded areas and storage of cement powder and fine materials in silos;
- Use of water suppression and regular cleaning, as necessary, to minimise mud on roads;
- Covering of vehicles leaving the construction site that are carrying construction waste materials (note: the transfer of any excavated material off site will be minimised) ;
- Employment of a wheel wash system at exits from the Site during the construction phase;
- Minimising storage duration of spoil during construction as far as is practical; and
- Prohibiting open fires on Site.

7.6.10 Good working practice measures will also be employed for the siting and operation of NRMM to control associated emissions, including:

- Minimising vehicle and plant idling as far as is practical (i.e. when not in use); and
- Locating static plant in a central area of the Site away from sensitive boundaries or receptors.

Operational Phase

7.6.11 There would be minimal emissions to air associated with the operation of the Electricity Grid Connection. No mitigation measures are therefore proposed.

Decommissioning Phase

7.6.12 Decommissioning of the Electricity Grid Connection is not envisaged as it will be managed by EirGrid once it is operational and will become an important part of the national grid infrastructure. Therefore, no mitigation measures are proposed.

Gas Connection Corridor

Construction Phase

7.6.13 Based on an initial assessment of the area of sensitivity to dust impacts and the likely risk of impacts arising from each of the key construction activities (demolition, earthworks, construction and trackout of material onto roads) (refer to **EIAR Appendix 7A, EIAR Volume II**), and as described in section 7.5, appropriate embedded mitigation measures to be implemented during construction (good site techniques drawn from the 'low risk' site schedule in IAQM guidance) that have been identified are:

- Storage of sand and aggregates in bunded areas and storage of cement powder and fine materials in silos;
- Use of water suppression and regular cleaning, as necessary, to minimise mud on roads;
- Covering of vehicles leaving the construction site that are carrying construction waste materials (note: the transfer of any excavated material off site will be minimised) ;
- Employment of a wheel wash system at exits from the Site during the construction phase;
- Minimising storage duration of spoil during construction as far as is practical; and
- Prohibiting open fires on Site.

7.6.14 Good working practice measures will also be employed for the siting and operation of NRMM to control associated emissions, including:

- Minimising vehicle and plant idling as far as is practical (i.e. when not in use); and
- Locating static plant in a central area of the Site away from sensitive boundaries or receptors.

Operational Phase

7.6.15 There would be minimal emissions to air associated with the operation of the Gas Connection Corridor. No mitigation measures are therefore proposed.

Decommissioning Phase

7.6.16 Decommissioning of the Gas Connection Corridor is not envisaged as it will be managed by Gas Networks Ireland (GNI) and will become an important part of the national gas network infrastructure. Therefore, no mitigation measures are proposed.

7.7 Residual Effects

Power Plant Area

Construction Phase

7.7.1 The air quality assessment of construction impacts assumes that the impact avoidance measures outlined within Section 7.5 will be incorporated into the design of the Power Plant Area, as they are standard good practice measures that are routinely applied across large construction sites. No specific additional mitigation has been identified as necessary for the construction phase of the Power Plant Area. For this reason, the residual effects would be as reported within Section 7.5 of this chapter. No significant effects have been identified.

Operational Phase

7.7.2 The air quality dispersion modelling assessment has concluded that there would be a small increase in ground-level concentrations of NO_2 and CO and that operational concentrations of the modelled pollutants would be well within current Environmental Standards.

7.7.3 The Power Plant Area will comply with the requirements of the European Union (Large Combustion Plants) Regulations 2012 S. I. No. 566 of 2012 under an Industrial Emissions (IE) Licence (which is to be applied for) so that any impacts of emissions to air, soil, surface and groundwater, and effects on the environment and human health, will be minimised and avoided where possible.

7.7.4 The air quality assessment of impacts at opening has assumed that the ELVs will be met for the operational Power Plant Area as required and in accordance with use of BAT under the EPA's environmental permitting regime. No specific additional mitigation has been identified as necessary for the operational phase of the Power Plant Area. For this reason, the residual effects would be as reported within Section 7.5 of this chapter. No significant effects have been identified.

Decommissioning Phase

7.7.5 Consistent with construction mitigation, it has been assumed that relevant standard best practice mitigation measures would be in place during any decommissioning works. No significant effects are anticipated.

Electricity Grid Connection

Construction Phase

7.7.6 The air quality assessment of construction impacts associated with the construction of the Electricity Grid Connection assumes that the impact avoidance measures outlined within Section 7.6 will be incorporated into the design of the scheme, as they are standard good practice measures that are routinely applied across construction sites. No specific additional mitigation has been identified as necessary for the construction phase. For this reason, the residual effects would be as reported within Section 7.5 of this chapter. No significant effects have been identified.

Operational Phase

7.7.7 Emissions to air from the operation of the Electricity Grid Connection would be minimal and have been classified as negligible. For this reason, the residual effects would be as reported within Section 7.5 of this chapter. No significant effects have been identified.

Decommissioning Phase

7.7.8 Decommissioning of the Electricity Grid Connection is not envisaged and has not been assessed under this EIAR as it will be managed by EirGrid once it is operational and will become an important part of the Republic of Ireland's national grid infrastructure.

Gas Connection Corridor

Construction Phase

7.7.9 The air quality assessment of construction impacts associated with the construction of the Gas Connection Corridor assumes that the impact avoidance measures outlined within Section 7.6 will be incorporated into the design of the scheme, as they are standard good practice measures that are routinely applied across construction sites. No specific additional mitigation has been identified as necessary for the construction phase. For this reason, the residual effects would be as reported within Section 7.5 of this chapter. No significant effects have been identified.

Operational Phase

7.7.10 Emissions to air from the operation of the Gas Connection Corridor would be minimal and have been classified as negligible in magnitude. For this reason, the residual effects would be as reported within Section 7.5 of this chapter. No **likely** significant effects have been identified.

Decommissioning Phase

7.7.11 Decommissioning of the Gas Connection Corridor is not envisaged and has not been assessed under this EIAR as it will be managed by Gas Networks Ireland (GNI) and will become an important part of the Republic of Ireland's gas network infrastructure.

7.8 Cumulative Effects

Interaction of Effects between the Various Elements of the Proposed Development and Overall Project

7.8.1 The potential cumulative impacts from interactions between various elements of the Proposed Development and Overall Project, as described in **Chapter 5,** have been considered in terms of impacts on Air Quality. Due to the proximity, scale and timelines associated with each element, there is potential for cumulative effects with the Proposed Development and Overall Project.

7.8.2 This impact assessment has considered all elements of the Proposed Development and Overall Project, including elements which are not subject to this planning permission, during the construction, operation and decommissioning phases. A thorough cumulative impact assessment has therefore been carried out throughout this chapter to examine the impacts that the various elements of the Overall Project will have on Air Quality.

Cumulative In-Combination Effects

7.8.3 The potential cumulative effects of the Proposed Development and Overall Project in combination with the other projects described in Chapter 4 of this report have been considered in terms of impacts on Air Quality. There are a number of proposed or permitted housing developments within the vicinity of the Proposed Development and Overall Project. A description of the developments is provided in Chapter 1, and where appropriate the application documentation, EIAR and NIS. Further information on the above is provided in Chapter 1.

Construction Phase

7.8.4 The dust emissions to air from other committed developments and cumulative emission sources in the area around the site are not close enough to generate cumulative impacts should they occur at the same time.The risk and associated level of mitigation would therefore be the same as set out in Section 7.5.

Operational Phase

7.8.5 For the cumulative operational emissions to air, with the magnitude of the predicted impacts and NO_2 and CO concentrations, it is considered unlikely that the Proposed Development and Overall Project will interfere with policies or plans in place to bring about sustained achievement of the AQS values. The overall effect of changes in NO_2 and CO concentrations due to emissions from the Proposed Development is considered to be **imperceptible**.

7.8.6 To conclude, cumulative effects on air quality are expected to be **imperceptible**. Any other proposed developments which are not accounted for in background pollutant concentrations would be unlikely to cause a significant impact.

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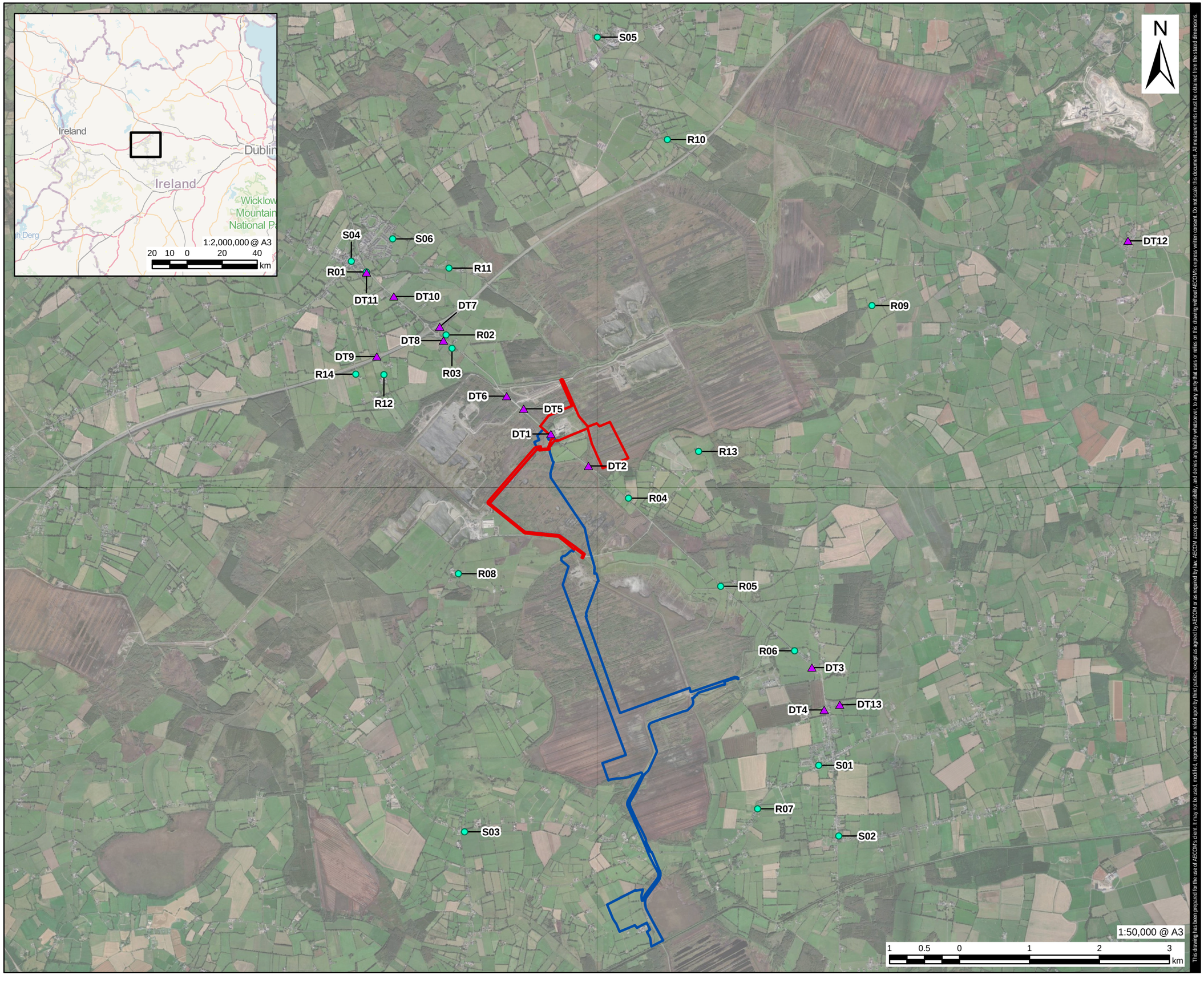

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LEGEND

- Power Plant Area Boundary
- Electricity Grid Connection Boundary
- AECOM NO_2 Diffusion Tube Monitoring
- Human Health Receptor

NOTES

ISSUE PURPOSE

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PROJECT NUMBER

60699676

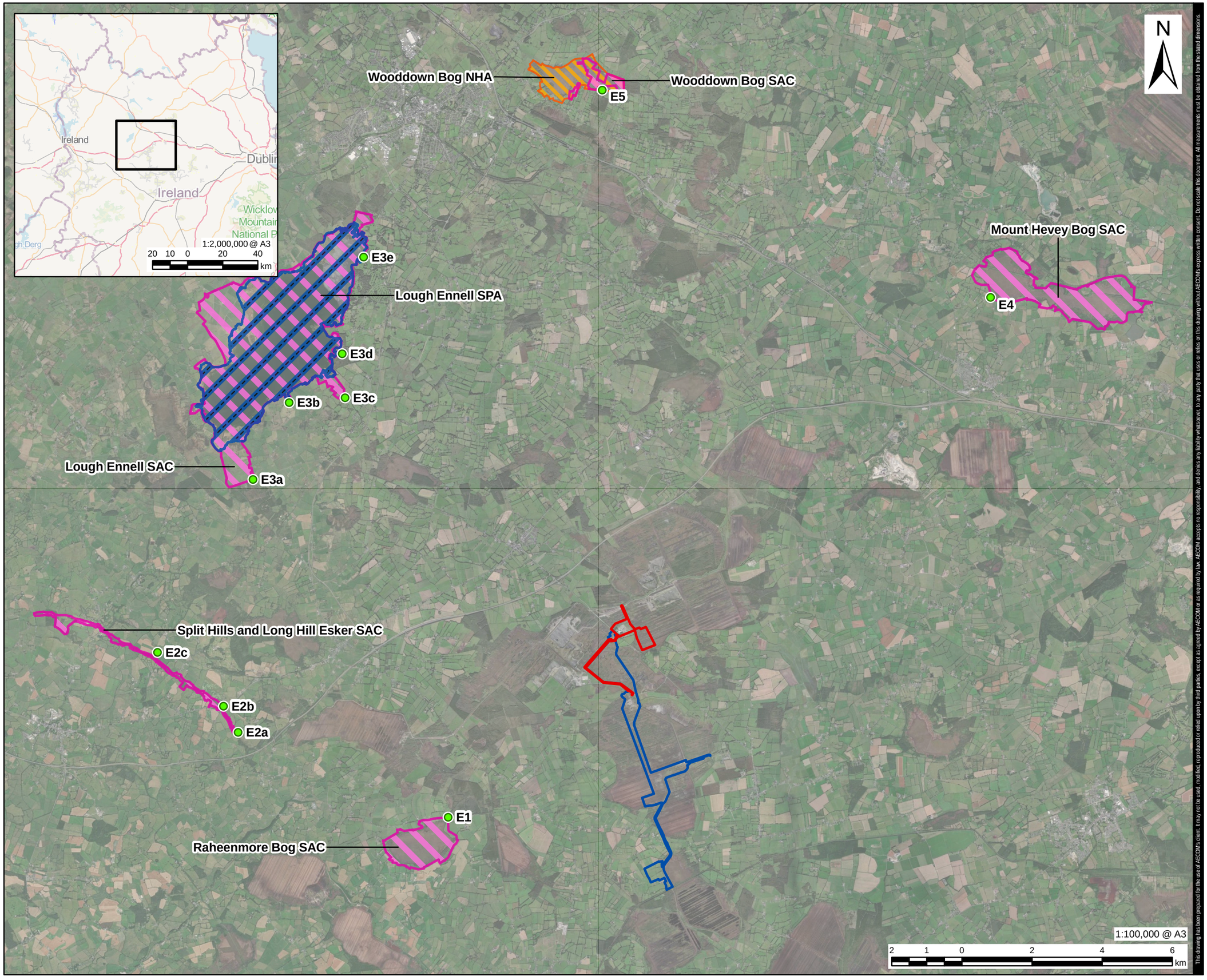
FIGURE TITLE

Air Quality Study Area and Human Receptors and Baseline Monitoring Locations

FIGURE NUMBER

Figure 7A.1

Revision: P01 Drawn: JB Checked: EU Approved: AB Date: 2024-01-16



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LEGEND

- Power Plant Area Boundary
- Electricity Grid Connection Boundary
- Ecological Receptor

Designated Sites

- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Natural Heritage Area (NHA)

NOTES

ISSUE PURPOSE

FOR ISSUE

PROJECT NUMBER

60699676

FIGURE TITLE

Air Quality Ecological Receptors

FIGURE NUMBER

Figure 7A.2

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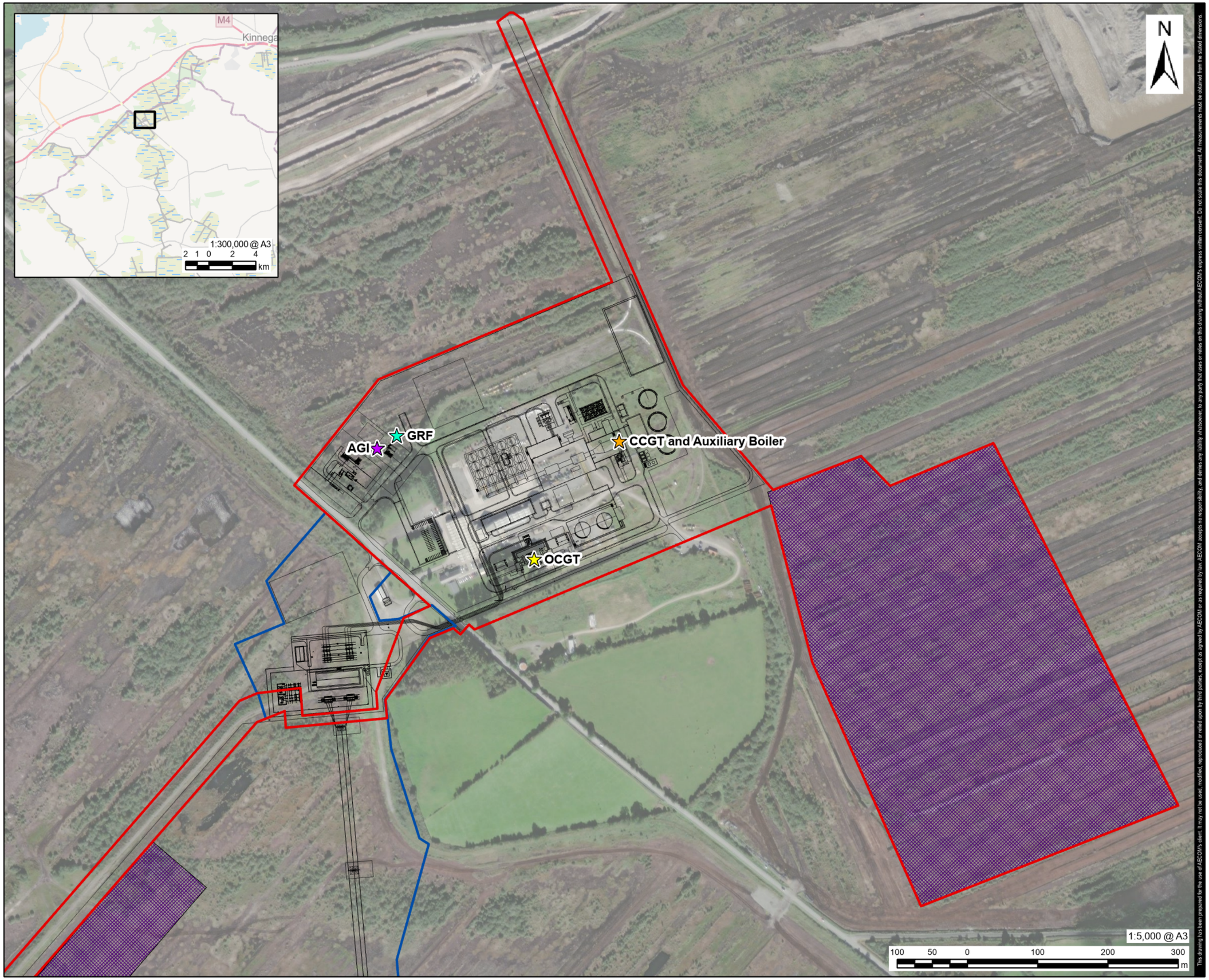

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LEGEND

- Power Plant Area Boundary
- Electricity Grid Connection Boundary

Project Elements

- Project Layout
- Tree Replanting Area
- Peat Deposition Area

Source

- AGI
- CCGT and Auxiliary Boiler
- GRF
- OCGT

NOTES

ISSUE PURPOSE

FOR ISSUE

PROJECT NUMBER

60699676

FIGURE TITLE

Air Quality Study Area Modelled Emission Sources

FIGURE NUMBER

Figure 7A.3

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LEGEND

- Power Plant Area Boundary
- Electricity Grid Connection Boundary
- Annual Mean NO_2 Process Contribution ($\mu g/m^3$)

NOTES

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PROJECT NUMBER

60699676

FIGURE TITLE

Annual Mean NO_2 Process Contribution for Full Load continuous operations for worst affected meteorological year of 2020

FIGURE NUMBER

Figure 7A.4

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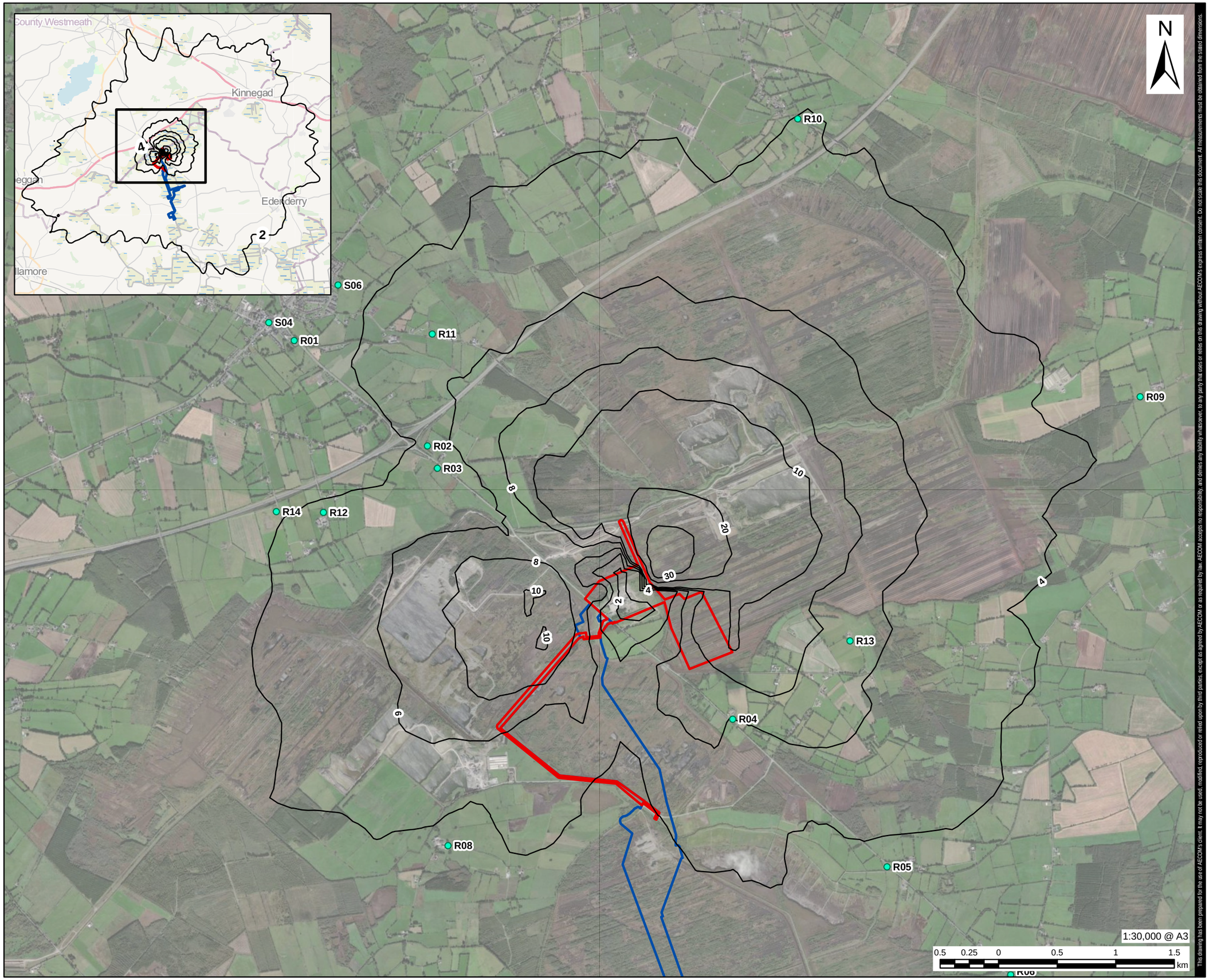

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LEGEND

- Power Plant Area Boundary
- Electricity Grid Connection Boundary
- 99.79th Percentile NO_2 Process Contribution ($\mu g/m^3$)
- Human Health Receptor

NOTES

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PROJECT NUMBER

60699676

FIGURE TITLE

99.79th Percentile NO_2 Process Contribution for Full Load continuous operations for worst affected meteorological year of 2020

FIGURE NUMBER

Figure 7A.5

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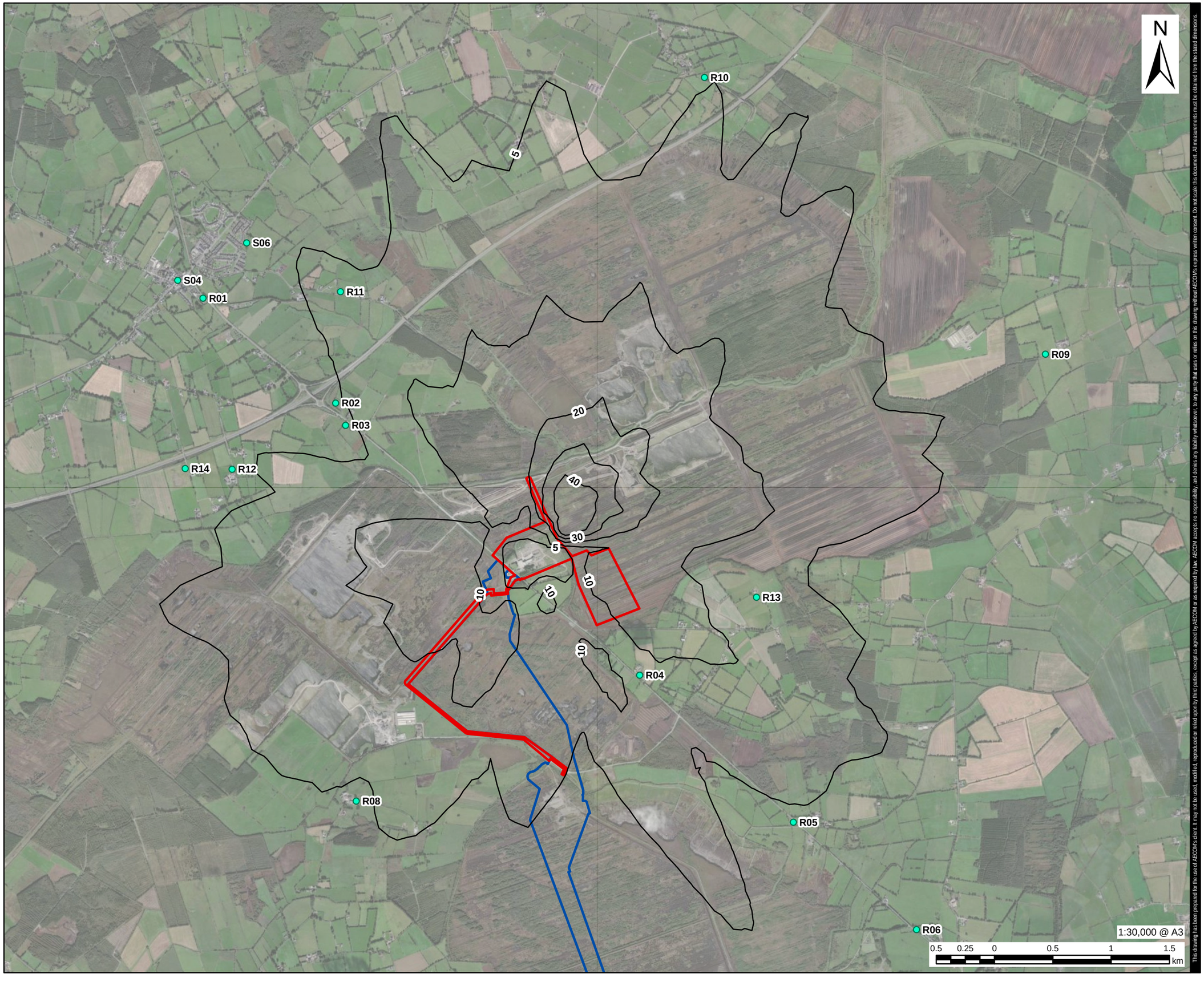

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LEGEND

- Power Plant Area Boundary
- Electricity Grid Connection Boundary
- Maximum 8-hour Running Mean CO Process Contribution (µg/m^3)
- Human Health Receptor

NOTES

ISSUE PURPOSE

FOR ISSUE

PROJECT NUMBER

60699676

FIGURE TITLE

Maximum 8-hour Running Mean CO Process Contribution for Full Load continuous operations for worst affected meteorological year of 2020

FIGURE NUMBER

Figure 7A.6