TABLE OF CONTENTS

TABLES

PLATES

There are no plates in this chapter.

VOLUME II: FIGURES (ES VOLUME II, EN070009/APP/6.3)

Figure 8-3: Air Quality Study Area – Construction Road Traffic Locations.

Figure 8-4: Air Quality Study Area – Operational Model Inputs Phase 1.

Figure 8-5: Air Quality Study Area – Operational Model Inputs Phase 2.

Figure 8-6: Annual Mean NO_2 Process Contribution for the Proposed Development during Normal Operations for Phase 1 and 2 Combined – for the Worst Affected Meteorological Year of 2022.

Figure 8-7: 99.79th Percentile 1h NO_2 Process Contribution for the Proposed Development during Normal Operations for Phase 1 and 2 Combined – for the Worst Affected Meteorological Year of 2021.

Figure 8-8: 99.79th Percentile 1h NO_2 Process Contribution for the Proposed Development during Emergency Operations for Phase 1 and 2 Combined – for the Worst Affected Meteorological Year of 2022.

Figure 8-9: 99.79th Percentile 1h NO_2 Process Contribution for the Proposed Development during Start Up for Phase 1 and 2 Combined – for the Worst Affected Meteorological Year of 2020

Figure 8-10: Nitrogen Deposition from Process Contribution for the Proposed Development during Normal Operations for Phase 1 and 2 Combined – for the Worst Affected Meteorological Year of 2022.

VOLUME III: APPENDICES (ES VOLUME III, EN070009/APP/6.4)

Appendix 8A: Air Quality – Construction Assessment.

Appendix 8B: Air Quality – Operational Phase.

8.0 AIR QUALITY

8.1 Introduction

8.1.1 This chapter of the Environmental Statement (ES) identifies the potential impacts and effects on air quality that are to be considered as part of the Environmental Impact Assessment (EIA) of the Proposed Development. The assessment has been undertaken in accordance with best practice guidance described below.

8.1.2 This chapter of the ES identifies the potential impacts and effects of the Proposed Development on air quality. The air quality assessment has considered a realistic worst case for the timing of construction and operation of both Phase 1 and 2. For further detail regarding the phasing of the Proposed Development, and the different technologies being considered, please refer to Chapter 4: Proposed Development (ES Volume I, EN070009/APP/6.2) and Chapter 5: Construction Programme and Management (ES Volume I, EN070009/APP/6.2).

8.1.3 As agreed through EIA scoping, the focus of the air quality assessment is on the following:

- construction emissions from vehicles;
- construction dust; and
- operational emissions from the Hydrogen Production Facility.

8.1.4 Emissions from construction Non-Road Mobile Machinery (NRMM) and operational emissions from vehicles are also discussed within the air quality assessment.

8.1.5 This assessment has been undertaken in accordance with best practice guidance from the Department for Environment, Food and Rural Affairs (Defra), the Environment Agency and the Institute of Air Quality Management (IAQM):

- Air emissions risk assessment for your environmental permit (Defra and Environment Agency, 2016, as updated in 2023).
- Land-use Planning & Development Control: Planning for Air Quality (Environmental Protection UK (EPUK)/IAQM, 2017).
- Guidance on the assessment of dust from demolition and construction (IAQM, 2024).

8.2 Legislation, Planning Policy Context and Other Guidance

8.2.1 This section identifies and describes legislation, planning policy and guidance that is of relevance to the assessment of air quality effects.

Legislative Background

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations')

8.2.2 This air quality assessment has provided the information required to understand the anticipated air quality impacts and effects associated with the Proposed Development as required by the EIA Regulations.

The Air Quality Directive 2008

8.2.3 European Union (EU) air quality legislation is provided within the Ambient Air Quality and Cleaner Air for Europe Directive 2008/50/EC (The Air Quality Directive) (Council for European Communities, 2008), which is transcribed into United Kingdom (UK) legislation by The Air Quality Standards Regulations 2010 (The Stationery Office Limited, 2010) as amended by the Air Quality Standards (Amendment) Regulations 2016 (The Stationery Office Limited, 2016). These limit values are legally binding on the UK and have been set with the aim of avoiding, preventing, or reducing harmful effects on human health and on the environment.

8.2.4 EU legislation which applied directly or indirectly to the UK before 23:00. on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'. This is set out in sections 2 and 3 of the EU (Withdrawal) Act 2018 (c. 16) (The Stationery Office Limited, 2018). Section 4 of the 2018 Act ensures that any remaining EU rights and obligations, including directly effective rights within EU treaties, continue to be recognised and available in domestic law after the UK's exit from the EU.

The Air Quality Standards Regulations 2010

8.2.5 The 2010 Regulations (The Stationery Office Limited, 2010) set air quality limits for a number of major air pollutants that have the potential to impact public health, such as nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO) and particulate matter (PM) in the form of PM_{10} (PM of 10 micrometres (µm) diameter or less). The 2010 Regulations also include an exposure reduction objective for $PM_{2.5}$ (PM of 2.5 µm diameter or less) in urban areas and a national target value for $PM_{2.5}$.

The Environment Act 1995

8.2.6 The Environment Act 1995 (HM Government, 1995 requires the UK Government to produce a national Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland containing standards, objectives and measures for improving ambient air quality and to keep the policies identified under review. The national AQS requires that local authorities undertake a tiered assessment of air quality within their jurisdiction to determine whether (or not) the objectives established in the AQS are being achieved. Where the objectives are likely to be exceeded, the local authority must designate an Air Quality Management Area (AQMA) and establish an Air Quality Action Plan (AQAP), which outlines measures to achieve the objectives. These objectives apply to outdoor locations where people are regularly present and do not apply to occupational, indoor or in-vehicle exposure. The human

health objectives that are applicable to this assessment are set out in Table 8-1. Defra has responsibility for coordinating assessments and AQAPs for the UK as a whole.

8.2.7 Five versions of the national AQS have been published to date (2000 to 2023) with the current 2023 version having recently been published. The current version is called the Air Quality Strategy: framework for local authority delivery (Defra, 2023). It provides a framework to enable local authorities to make best use of their powers and make improvements for their communities.

Table 8-1: National Air Quality Strategy Objectives (NAQS) - Protection of Human Health

POLLUTANT	SOURCE	CONCENTRATION ($\mu g/m^3$)	MEASURED AS
NO_2	National Air Quality Objective Value	40	Annual mean
		200	1-hour mean, not to be exceeded more than 18 times per year
PM_{10}	National Air Quality Objective Value	40	Annual mean
		50	24-hour mean, not to be exceeded more than 35 times a year
$PM_{2.5}$	National Air Quality Objective Value	20	Annual mean
CO	National Air Quality Objective Value	10,000	Maximum daily running 8 hour mean
SO_2	National Air Quality Objective Value	266	15-minute mean, not to be exceeded more than 35 times a year
		350	1-hour mean, not to be exceeded more than 24 times a year
		125	24-hour mean, not to be exceeded more than 3 times a year

8.2.8 No AQMAs have been declared for the Proposed Development Site or the surrounding area. The nearest AQMA to the Proposed Development Site is located outside of the defined air quality Study Area (refer to Section 8.3), in Staithes, approximately 20 km to the south-east of the Proposed Development Site. This AQMA is designated for the exceedance of the 24-hour PM_{10} limit value. Based on

Defra forecast models and local authority monitoring data, no exceedances of the AQS have been identified in the vicinity of the Proposed Development Site.

The Environment Act 2021

8.2.9 The Environment Act 2021 (HM Government, 2021) amends the Environment Act 1995 (HM Government, 1995). It includes provisions to establish a post-Brexit set of statutory environmental principles and ensure environmental governance through an environmental watchdog, the Office for Environmental Protection (OEP). Part IV of the Environment Act (2021) requires the government to produce a new national AQS which contains standards, objectives and measures for improving ambient air quality. The AQS proposes for the Secretary of State (SoS) to publish a report reviewing the AQS every five years (as a minimum and with yearly updates to Parliament). The Act also included a proposal that the Government set two targets by October 2022: the first on the amount of $PM_{2.5}$ pollutant in the ambient air and a second long-term target set at least 15 years ahead to encourage stakeholder investment.

8.2.10 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (The Stationery Office Limited, 2022) introduced the two targets described above with a target level for annual mean concentrations of $PM_{2.5}$ to be achieved at relevant monitoring stations by 31 December 2040 and an exposure reduction target for the Secretary of State (SoS) to report on by 15 July 2041. For the purposes of these regulations, relevant monitoring locations are fixed monitoring stations within the national monitoring network. There are no such monitoring locations within the air quality Study Area for the Proposed Development.

Critical Levels and Loads

8.2.11 In addition to the ambient thresholds described above for human health, critical levels for the protection of vegetation have also been set out in legislation (The Air Quality Standards Regulations 2010) and Environment Agency air emissions risk assessment guidance (Environment Agency, 2023b). The impact of emissions from the Proposed Development on sensitive ecological receptors can be quantified in two ways:

- as direct impacts arising due to increases in atmospheric pollutant concentrations, assessed against defined ‘critical levels’; and
- as indirect impacts arising through deposition of acids and nutrient nitrogen to the ground surface, assessed against defined ‘critical loads.’

8.2.12 The critical levels for the protection of vegetation and ecosystems are set out in Table 8-2 and apply regardless of the habitat type or species present at the habitat receptor. In the case of ammonia (NH_3), the greater sensitivity of lichens and bryophytes to these pollutants is reflected in the application of two critical levels, with a stricter critical level applied to locations where such species are present.

Table 8-2: Critical Levels (CL) – Protection of Vegetation and Ecosystems

POLLUTANT	SOURCE	CONCENTRATION ($\mu g/m^3$)	MEASURED AS
Oxides of nitrogen (NO_x)	National Air Quality Objective Value	30	Annual mean
	Environment Agency air emissions risk assessment guidance	75	Daily Mean
SO_2	Environment Agency air emissions risk assessment guidance for lichen and bryophytes	10	Annual mean
	National Air Quality Objective Value	20	Annual mean
Ammonia (NH_3)	Environment Agency air emissions risk assessment guidance for lichen and bryophytes	1	Annual mean
	Environment Agency air emissions risk assessment guidance	3	Annual mean

8.2.13 Critical load criteria for the deposition of nutrient nitrogen and acidifying species are dependent on the habitat type and species present, and therefore are specific to the sensitive receptors considered within the assessment. The relevant critical loads for the ecological receptors considered in this assessment are defined on the Air Pollution Information System website (Centre for Ecology and Hydrology and APIS, 2017).

8.2.14 Throughout the remainder of this chapter and the associated technical appendices, NAQS objectives, UK target values (i.e., Environmental Assessment Levels) and critical levels are collectively referred to as Air Quality Assessment Levels (AQALs).

Industrial Emissions Directive 2010 and Environmental Permitting Regulations (2016)

8.2.15 The EU's Industrial Emissions Directive (IED) (European Commission, 2010) provides operational limits and controls to which regulated plant must comply, including Emission Limit Values (ELVs) for pollutant releases into the air. The operator of a plant covered by the IED is required to employ Best Available Techniques (BAT) for the prevention or minimisation of emissions to the environment, to ensure a high level of protection of the environment as a whole. European BAT reference documents (BRefs) are published for each industrial sector regulated under the IED, and they include BAT-Associated Emission Levels (BAT-AELs) which are expected to be met through the application of BAT. These levels may be the same as the ELVs published in the IED, or they may be more stringent.

8.2.16 However, as an emerging technology, there is currently no finalised BRef or BAT guidance document available for a Hydrogen Production Facility with associated

Carbon Capture, and therefore no BAT-AELs have been defined for the activity to date. However, guidance on Emerging techniques for hydrogen production with carbon capture has been released (Environment Agency, 2023) and this has formed the basis for discussions with the Environment Agency to agree appropriate BAT and AELs. The environmental permit application required for the operation of the Proposed Development is being developed and will incorporate the agreed approach to BAT and AELs. The permit application is being made in parallel with this Development Consent Order (DCO) submission.

8.2.17 Additionally, part of the technology used, such as the auxiliary boilers, will need to comply with the Large Combustion Plant (LCP) BRef, as the aggregated thermal input is predicted to be over 50 MW. However, as the boilers will run on a hydrogen rich tail gas during normal operations, the natural gas ELVs can't be used directly and will be updated to take the hydrogen content of the tail gas into account as discussed with the Environment Agency.

8.2.18 Other BRef documents such as the Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector will also be taken into account where relevant.

Sensitive Ecosystems

8.2.19 The UK is bound by the terms of the European Birds (European Commission, 2009) and Habitats Directives (European Commission, 1992) and the Ramsar Convention (Ramsar, 1971). The Conservation of Habitats and Species Regulations 2017 (HM Government, 2017) (the 2017 Regulations) provide for the protection of sites created under these i.e., Special Areas of Conservation (SACs) designated pursuant to the Habitats Directive, Special Protection Areas (SPAs) and provisional SPAs (pSPAs) classified under the Birds Directive. Specific provisions of the European Directives are also applied to SACs and candidate SACs (cSACs) which requires these sites to be given special consideration, and for further assessment to be undertaken for any development which is likely to lead to a significant effect upon them. Pursuant to the NPS and NPPF, consideration has also been given to Ramsar sites, designated as wetlands of international importance.

Planning Policy Context

National Planning Policy

The National Policy Statement for Energy (EN-1) (2023)

8.2.20 National Policy Statements (NPSs) are, where in place, the primary basis for the assessment and determination of applications for Nationally Significant Infrastructure Projects (NSIPs) such as the Proposed Development.

8.2.21 This version of the NPS reflects the UK Government policies and strategic approach for the energy system that is set out in the Energy White Paper (December 2020), and to ensure that the planning policy framework enables the delivery of the infrastructure required for the country's transition to net zero carbon emissions. EN-1 states at paragraph 4.12.2 that:

"The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest… Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health".

8.2.22 Paragraph 4.12.9 and 4.12.10 state:

"In considering an application for development consent the Secretary of State should focus on whether the development itself is an acceptable use of the land or sea, and the impact of that use, rather than the control of processes, emissions or discharges themselves".

"The Secretary of State should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes…will be properly applied and enforced by the relevant regulator".

8.2.23 Within Section 5.2, the Overarching National Policy Statement for Energy (EN-1) (Department for Energy Security & Net Zero (DESNZ), 2023a) requires the consideration of significant air emissions, their mitigation and any residual effects, the predicted absolute emission levels after application of mitigation, the relative change in air quality from existing concentrations and any potential eutrophication impacts as a result of a proposed development's project stages, including contributions from additional road traffic. All the above is covered within the air quality assessment for the Proposed Development. Where a project could result in deterioration in air quality in an area where national air quality limits are not being met or may lead to a new area breaching national air quality limits, or where substantial changes in air quality concentrations are predicted, such effects would be expected to be given substantial weight in consideration of the acceptability of the proposal. Where a project is likely to lead to a breach of statutory air quality limits, the NPS sets out that the developer should work with the relevant authorities to secure appropriate mitigation measures to allow the proposal to proceed.

The National Policy Statement for Gas and Oil Pipelines (EN-4) (2023)

8.2.24 NPS EN-4 sets out planning policy specific to gas supply infrastructure and gas and oil pipelines (DESNZ, 2023b). The NPS states that the effect of gas emissions and specific effects on flaring and venting gas should be assessed and makes particular reference to EN-1 in regard to assessing the potential effects (see paragraph 2.9.24 of the EN-4). EN-4 does not introduce any additional requirements for air quality assessments, and relevant emissions from the Proposed Development are included within this assessment.

The National Policy Statement for Electrical Networks Infrastructure (EN-5) (2023)

8.2.25 NPS EN-5 sets out planning policy specific to electricity network infrastructure projects (DESNZ, 2023c). The NPS does not include any policies specific to emission to air.

The National Planning Policy Framework (2023)

8.2.26 The NPPF (Ministry of Housing, Communities and Local Government, 2023) concisely sets out national policies and principles on land use planning. Paragraph 180 of the NPPF states that:

"*Planning policies and decisions should contribute to and enhance the natural and local environment by… e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability…*"

8.2.27 The effect of the Proposed Development on the achievement of such policies and plans are matters that may be a material consideration by planning authorities when making decisions for individual planning applications. Paragraph 192 of the NPPF states that:

"*Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas… Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.*"

Planning Practice Guidance (PPG) for Air Quality (2021)

8.2.28 The National Planning Practice Guidance (NPPG) (Department for Communities and Local Government, 2021) was first launched on 6 March 2014. It was last updated on 24 June 2021 and provides a web-based guidance resource in support of the NPPF. It provides a summary of the air quality issues set out in the NPPF and goes on to note that assessments of the impact of a proposed development on air quality should include the following information:

- the existing air quality in the study area (existing baseline);
- the future air quality without the development in place (future baseline); and
- the future air quality with the development in place (with mitigation).

8.2.29 The PPG then advises that a planning application should proceed to decision with appropriate planning conditions or planning obligations, if the proposals (including mitigation) would not lead to an unacceptable risk from air pollution and prevent sustained compliance with EU limit values.

Local Planning Policy

8.2.30 Local air quality planning policy may be something which the SoS considers is both important and relevant to the determination of the application for the Proposed Development. Local air quality planning policy has been presented for those authorities within which the Proposed Development is located and authorities which are included within the air quality study area.

Redcar and Cleveland Borough Council Local Plan (2018)

8.2.31 Redcar and Cleveland Borough Council (RCBC) adopted its Local Plan in May 2018 (RCBC, 2018), which includes Policy SD 4: General Development Principles, which states that:

"All development must be designed to a high standard. Development proposals will be expected to…:

n. minimise pollution including light and noise and vibration levels to meet or exceed acceptable limits…"

8.2.32 Policy LS 4: South Tees Spatial Strategy, states that:

"The Council and its partners will aim to…..:

I. encourage clean and more efficient industry in the South Tees area to help reduce carbon dioxide emissions and risk of environmental pollution…"

Stockton-on-Tees Borough Council Local Plan (2019)

8.2.33 Stockton-on-Tees Borough Council (STBC) adopted its Local Plan in January 2019 (STBC, 2019), which includes Policy SD5: Natural, Built and Historic Environment, which states that:

"To ensure the conservation and enhancement of the environment alongside meeting the challenge of climate change the Council will:

1. Conserve and enhance the natural, built and historic environment through a variety of methods including:…

I. Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of ground, air, water, light or noise pollution or land instability. Wherever possible proposals should seek to improve ground, air and water quality."

8.2.34 Policy ENV7: Ground, Air, Water, Noise and Light Pollution states that:

"1. All development proposals that may cause groundwater, surface water, air (including odour), noise or light pollution either individually or cumulatively will be required to incorporate measures as appropriate to prevent or reduce their pollution so as not to cause unacceptable impacts on the living conditions of all existing and potential future occupants of land and buildings, the character and appearance of the surrounding area and the environment.

2. Development that may be sensitive to existing or potentially polluting sources will not be sited in proximity to such sources. Potentially polluting development will not be sited near to sensitive developments or areas unless satisfactory mitigation measures can be demonstrated.

3. Where development has the potential to lead to significant pollution either individually or cumulatively, proposals should be accompanied by a full and detailed assessment of the likely impacts. Development will not be permitted when it is considered that unacceptable effects will be imposed on human health, or the environment, taking into account the cumulative effects of other proposed or

existing sources of pollution in the vicinity. Development will only be approved where suitable mitigation can be achieved that would bring pollution within acceptable levels."

Hartlepool Borough Council Local Plan (2018)

8.2.35 Hartlepool Borough Council (HBC) adopted its Local Plan in May 2018 (HBC, 2018), which includes Paragraph 9.49, which states that:

"Residents and visitors should not suffer from pollution (noise, dust, fumes or odour) or poor air and water quality. The location and design of development should have due regard to minimising the impacts of pollution both on existing land uses and the future proposed land use."

Other Guidance

8.2.36 The Institute of Air Quality Management (IAQM) is a professional body that produces guidance on the assessment of air quality. IAQM guidance will be used in this assessment where statutory guidance isn't available. The assessment of effects arising from construction vehicle emissions is also informed by Natural England's guidance relating to assessment of road traffic emissions under the Habitats Regulations, NEA001 (Natural England, 2018).

8.3 Assessment Methodology and Significance Criteria

Study Area

8.3.1 The air quality Study Areas for the assessments carried out have been defined according to the appropriate guidance for the type of assessment being undertaken (i.e., construction dust, construction traffic and the operational Proposed Development), and therefore these vary for the various types of air quality assessments.

8.3.2 The Study Area for the construction dust and construction NRMM emissions has been applied in line with IAQM guidance (IAQM, 2024), extending:

- up to 250 m beyond the Proposed Development Site and 50 m from the construction traffic routes (up to 250 m from the Proposed Development Site entrances), for human health receptors; and
- up to 50 m from the Proposed Development Site and construction traffic routes (up to 250 m from the Proposed Development Site entrances) for ecological receptors.

8.3.3 The Study Area for the traffic assessment is defined in the screening criterion set out in the Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality (Highways England, 2019) and the IAQM/Environmental Protection UK (EPUK) guidance (EPUK/IAQM, 2017), which states that only properties and habitat sites within 200 m of affected roads (roads that experience a change in traffic flow above a certain criteria) should be considered in road traffic emissions assessments.

8.3.4 The Study Area for the operational Proposed Development point source emissions extends up to 15 km from the emission sources to assess the potential impacts on

ecological receptors. This is in line with the Environment Agency Risk Assessment Methodology (Defra and Environment Agency, 2016, as updated in 2023) but also includes additional sites requested by the Proposed Development biodiversity specialists:

- SPAs, SACs, Ramsar sites and Sites of Special Scientific Interest (SSSIs) within 15 km of the Proposed Development Site; and
- Local Nature Sites (including ancient woodlands, Local Wildlife Sites (LWSs) and National and Local Nature Reserves (NNRs and LNRs)) within 2 km of the Proposed Development Site.

8.3.5 The additional sites include the North York Moors SPA and SSSI, the North Cumbria Coast SPA, Durham Cost SAC, Northumbria Coast Ramsar, Cliff Ridge SSSI, Durham Coast SSSI and NNR, Hart Bog SSSI, Langbaurgh Ridge SSSI, Loe Hill Pools SSSI, Roseberry Topping SSSI and Saltburn Gill SSSI.

8.3.6 In terms of human health receptors, based on similar modelling studies and EA guidance, impacts from the operational Proposed Development become negligible within 2 km and therefore sensitive receptors for the human health impacts are concentrated within a 2 km Study Area.

Impact Assessment Methodology

8.3.7 The potential emissions to air from construction, operation and decommissioning of the Proposed Development have been determined or estimated, and key local receptors have been identified, together with the current local ambient air quality.

8.3.8 Impacts arising from the construction, operational and decommissioning phases of the Proposed Development have been considered, which has enabled the assessment of the impacts associated with the Proposed Development on the existing local ambient air quality and particularly on the identified sensitive receptors.

8.3.9 Construction of Phase 1 is likely to last approximately three years. The early enabling works for Phase 2 may overlap with commissioning for Phase 1 in Q2 2028. It is expected that the main civils works for Phase 2 will begin in Q3 of 2028 (after Phase 1 is commissioned) and be completed by the end of 2030. It is proposed that there will be no overlap between the main construction phases of Phase 1 and 2. As there will be no overlap between main construction works, the approach that has been taken in the assessment considering the peak construction activities taking place in Phase 1 is considered to be a conservative approach which capture the worst case effects of construction traffic. With respect to construction dust, the assessment considers a range of construction activities across both Phase 1 and 2, assuming a worst case that these activities could occur across both phases at the same time.

8.3.10 Due to construction phasing, there may be a period following opening of Phase 1 where Phase 1 will be operational and Phase 2 in construction. For air quality, this means that there may be construction traffic pollutant emissions from Phase 2 construction at the same time as operation point source emissions from Phase 1

operation. Therefore, receptors in the surrounding area may receive pollutant contribution from both these emission sources. In practice, these are two very different types of emission source with road traffic emissions typically extending up to 200 m from the source with emissions released near ground level whilst operational emissions are released over a broader area, from height. This means, that typically, the greatest pollutant contributions at receptors in the Study Area will be very different for the two emission types. Significant air quality effects are not anticipated from this interaction. However, for completeness, the predicted contributions at receptors that may experience impacts from both sources have been combined to demonstrate the total pollutant contribution from the two emission sources. It is noted that this is a very precautionary approach as it combines the peak construction traffic pollutant contributions with the combined pollutant contributions from Phase 1 and 2 operations. The results of this exercise are presented in Section 8.6.

8.3.11 The assessment methodology for construction phase emissions is outlined below, with further details provided in the accompanying technical appendix (Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4)).

8.3.12 The process and traffic emissions assessments refer to the relevant AQALs as defined in Tables 8-1 and 8-2.

Construction Phase – Construction Dust Assessment

8.3.13 The movement and handling of soils and spoil during construction activities for the Proposed Development is anticipated to lead to the generation of some short-term airborne dust. The occurrence and significance of dust generated by earth moving operations is difficult to estimate and depends heavily upon the meteorological and ground conditions at the actual time and location of the work, and the nature of the activity being carried out.

8.3.14 At present, there are no statutory UK or EU standards relating to the assessment or control of dust. The emphasis of the regulation and control of construction dust, therefore, is through the adoption of Best Practicable Means (BPM) when working on-site to mitigate any potential impacts. It is intended that significant adverse environmental effects are avoided at the design stage and through embedded mitigation where possible, including the use of good working practices to minimise dust formation (refer to Section 8.5 for further information).

8.3.15 The IAQM provides guidance for good practice and for qualitative assessment of risk of dust emissions from construction and demolition activities (IAQM, 2024). The guidance considers the risk of dust emissions from unmitigated activities to cause human health impacts (associated with PM_{10}), dust soiling impacts, and ecological impacts (such as physical smothering and chemical impacts, for example from the 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.

8.3.16 The assessment undertaken for the Proposed Development is consistent with the overarching approach to the assessment of the impacts of construction, and the application of example descriptors of impact and risk set out in IAQM guidance. It considers the significance of potential effects with no mitigation and recommends mitigation measures appropriate to the identified risks to receptors. The steps in the assessment are to:

- identify receptors within the appropriate Study Area from the Proposed Development Site Boundary;
- identify the magnitude of impact through consideration of the scale, duration and location of activities being carried out (including demolition, earthworks, construction and trackout, where construction vehicles could carry mud onto the public highway);
- establish the sensitivity of the area through determination of the sensitivity of receptors and their distance from construction activities;
- determine the risk of significant effects on receptors occurring as a result of the magnitude of impact and the sensitivity of the receptors;
- determine the level of mitigation required based on the level of risk, to reduce potential effects at receptors to levels that are not significant or negligible; and
- summarise the potential residual effects of the mitigated works.

8.3.17 The criteria for the assessment of impact magnitude, receptor sensitivity and risk are summarised in Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4).

Construction Phase - Construction Site Plant Non-Road Mobile Machinery Assessment

8.3.18 There are likely to be emissions to air during construction activities arising from on-site construction plant or NRMM. The IAQM guidance (IAQM, 2024) states:

"Experience of assessing the exhaust emissions from on-site 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 on-site 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."

8.3.19 Emissions from NRMM associated with the Proposed Development will be temporary and localised and will be controlled via the application of appropriate emissions standards and through best-practice mitigation measures – refer to Section 8.5. There are also no sensitive human health receptors within 250m from the Main Site. For these reasons, effects associated with construction phase NRMM emissions are highly unlikely to be significant and, therefore, have been scoped out of this assessment. This approach is in line with Appendix 1B: Scoping Opinion (ES Volume III, EN070009/APP/6.4) for the Proposed Development.

Construction and Operational Phase - Road Traffic Assessment

8.3.20 The incomplete combustion of fuel in vehicle engines results in the presence of combustion products of CO, PM_{10}, and $PM_{2.5}$ in exhaust emissions as well as hydrocarbons (HC) such as benzene and 1,3-butadiene. Similarly, but to a lesser extent, any sulphur in the fuel can be converted to 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 NO_x, mainly in the form of nitric oxide (NO), which is then converted to NO_2 in the atmosphere. Better emission control technology and fuel specifications are expected to reduce emissions per vehicle across the UK vehicle fleet in the long term.

8.3.21 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 released concentrations of these pollutants are low enough to not give rise to significant effects due to the numbers of anticipated vehicles associated with either the construction or operation of the Proposed Development. In addition, no areas within the administrative boundaries of the relevant councils are considered at risk of exceeding the relevant objectives for these pollutants, and therefore the risks to the attainment of the relevant air quality objectives in the vicinity of the Proposed Development Site are considered to be negligible. Emissions of SO_2, CO, benzene and 1,3-butadiene from road traffic are, therefore, not considered further within this assessment.

8.3.22 The exhaust emissions from road vehicles that do have the potential to affect ambient concentrations of pollutants are NO_2, PM_{10} and $PM_{2.5}$. Therefore, the assessment of the significance of road traffic air quality effects only considers these pollutants.

8.3.23 DMRB LA105 (Highways England, 2019) sets out criteria to establish the need for an air quality assessment from road traffic. The standard considers the following changes in anticipated traffic as a result of a development in order to identify the need for further evaluation:

- Annual Average Daily Traffic (AADT) flows of more than 1,000 vehicles;
- 200 Heavy Duty Vehicles (HDVs - all vehicles greater than 3.5 tonnes gross weight, including buses);
- a change in the speed band; or
- a change in carriageway alignment by >5 m.

8.3.24 Guidance published by the IAQM proposes a lower threshold in AADT flow to warrant a detailed air quality assessment, namely:

- a change of 500 Light Duty Vehicles (LDV, all vehicles less than 3.5 tonnes gross weight) or 100 HDV when outside of an AQMA.

8.3.25 For changes in traffic below these criteria, significant changes in air quality are not expected.

8.3.26 Considering that the Proposed Development does not include any modifications to road carriageways and that there is no indication that there will be any change in average traffic speed due to the Proposed Development, the appropriate metric to determine if a detailed air quality assessment is necessary in this instance is the AADT and HDV flow criteria.

8.3.27 In order to conduct a worst-case assessment of the air quality impacts of construction traffic, the lower IAQM screening criteria has been applied for this assessment. The peak AADT associated with the construction phase of the Proposed Development on certain sections of roads exceed the IAQM threshold described above, particularly the number of HDV. Therefore, in accordance with the guidance, detailed air quality modelling is required.

8.3.28 This assessment has used the latest version of dispersion model software 'ADMS-Roads' (v5.0.0.1) 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 for the assessment of local air quality impacts, including model validation and verification studies.

8.3.29 The details of the assessment of construction and operational traffic are presented in Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2).

8.3.30 The traffic data used in this assessment includes the following scenarios:

- 2019 Baseline Scenario (for model verification process) (Base);
- 2026 Future Construction Year Base + Committed Developments (Future Year without Proposed Development); and
- 2026 Future Construction Year Base + Committed Developments + Peak Construction Scenario (Future Year with Proposed Development).

8.3.31 The future decommissioning baseline scenario is not included, as it is considered that the effects would be comparable to or lower than construction impacts, particularly given the expected improvements in vehicle fleet emissions over that time.

8.3.32 Data in the form of traffic flows, composition (percentage Heavy Goods Vehicles (HGVs)) and speed has been used in modelling of emissions from road traffic during the construction phase.

8.3.33 Consideration has also been given within the assessment to the potential cumulative traffic emissions from the construction of the Proposed Development as well as the contribution from traffic associated with other committed schemes in the area, as reflected in the final scenario referred to above. This is discussed further in Chapter 15: Traffic and Transportation (ES Volume I, EN070009/APP/6.2).

Operational Phase – Operational Traffic Assessment

8.3.34 No detailed assessment of operational traffic emissions has been made as the numbers of additional vehicles associated with the operational phase of the Proposed Development are predicted to be below the DMRB and IAQM screening criteria for requiring assessment as stated in Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2), the Proposed Development, once operational, will employ 100 people in Phase 1 and a further 30 once Phase 2 opens in Q4 2030. The staff will work a shift pattern with a minimum operational workforce of 60 staff members during the week. There is also expected to be a total of 15 HGVS and 50 Light Vehicles, and these would be spread throughout the working day. During 28-day maintenance periods, which are likely to occur approximately every four years, there could be up to 400 people on-site. Significant air quality effects are, therefore, not expected to be associated with the Proposed Development's operational traffic flows. This is in line with the Planning Inspectorate's ('the Inspectorate's') Scoping Opinion (Appendix 1B: Scoping Opinion (ES Volume III, EN070009/APP/6.4)) at ID 3.1.1 (The Inspectorate, 2023).

Operational Phase – Process Emissions from the Operational Plant

8.3.35 Emissions from the Proposed Development, assumed to be operational in 2028 (Phase 1) and 2030 (Phase 2) have been assessed using the Environment Agency's Risk Assessment methodology (Defra and Environment Agency, 2016, as updated in 2023) to identify where proposed emissions can be screened out as being unlikely to cause significant air quality effects. In line with Environment Agency Guidance (Defra and Environment Agency, 2016) detailed dispersion modelling using the atmospheric dispersion model ADMS (currently ADMS 5.2.2) has been used to calculate the concentrations of pollutants at identified receptors. The pollutants assessed from operational combustion sources include NO_x (ecosystems only), nitrogen deposition (ecosystems only) and acid deposition (ecosystems only), NO_2, CO, SO_2 (ecosystems and human health), PM_{10} and $PM_{2.5}$. These concentrations have been compared with the defined AQALs for each pollutant species as summarised in Table 8-1 and Table 8-2. There will be no emissions to air of amines and amine degradation products during normal operation, as the carbon dioxide capture process is a closed loop system. As there could be venting of CO_2 to atmosphere during planned maintenance and unplanned operational procedures, but the scope of such venting is not known at this time (as it will depend on the nature of the maintenance activity at any given time), a detailed assessment following a methodology previously accepted by the Environment Agency for other facilities with carbon capture will be included in the Environmental Permit application with respect to human health risks. The permit will ensure that any risks to human health are mitigated. The climate change chapter (Chapter 19: Climate Change (ES Volume I, EN070009/APP/6.2)) considers the climate change impacts of CO_2 releases. Other substances such as water vapour, nitrogen, oxygen, hydrogen and methane are not anticipated to be released in quantities that would potentially affect local air quality.

8.3.36 Dispersion modelling calculates the predicted concentrations arising from the emissions to atmosphere, based on Gaussian approximation techniques. The model that has been employed has been developed for UK regulatory use. Further details of the operational air quality modelling can be found in Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4).

8.3.37 Modelling has been undertaken assuming that the Proposed Development is operated continuously as this is considered to represent the worst-case scenario in terms of the annual average operational emissions. The worst result from five years of meteorological data, assuming Phase 1 and 2 are operational have been presented and evaluated within this chapter.

8.3.38 It is recognised that during start-up and shut down there may be short periods where emission concentrations are higher than those assessed for the annual average. At this stage in the design process there is limited data on the duration and release concentration of these emissions. Whilst the emission concentration may be higher, the gas flow rate will be lower than that to be modelled, therefore resulting in mass emissions that are likely to be reasonably comparable with steady state operation. It is therefore considered that this will have a minimal impact on the short-term impacts from the Proposed Development. However, an assessment has been provided within this ES with the information currently available for both start up and emergency conditions are presented in Appendix 8B (ES Volume III, EN070009/APP/6.4).

8.3.39 The first year of full operation of the Proposed Development, including Phase 1 and 2, is assumed to be 2030 for the purpose of this assessment.

8.3.40 The assessment of worst-case long-term (annual mean) and short-term (daily and hourly mean) emissions resulting from the operation of the Proposed Development has been undertaken by comparison of the maximum predicted process contributions at identified sensitive receptors with the annual mean and hourly mean AQALs, taking into consideration the baseline air quality, in accordance with the Environment Agency's Risk Assessment Methodology (Defra and Environment Agency, 2016, as updated in 2023).

8.3.41 An assessment of nutrient nitrogen enrichment has been undertaken by applying published deposition velocities to the predicted annual average NO_2 concentrations at ecological sites (selected in conjunction with biodiversity specialists), determined through dispersion modelling, to calculate nitrogen deposition rates (expressed as kilograms per hectare per year, Kg/ha/yr). These deposition rates have then been compared to the Critical Loads for nitrogen published by UK Air Pollution Information System (APIS) (Centre for Ecology and Hydrology and APIS, 2016), taking into consideration the baseline air quality.

8.3.42 Potential increases in acidity on designated ecological receptors from depositional contributions of NO_2 have also be considered. Acid deposition is derived from nitrogen deposition modelling values using standard conversion factors and expressed as kilograms of nitrogen equivalent per hectare per year (KqNeq/ha/yr). The process contribution acid deposition rates and baseline deposition rates have

been used within the APIS Critical Load Function Tool (Centre for Ecology and Hydrology and APIS, 2016) to determine whether the contribution will result in exceedance of the defined acidity Critical Loads for the most sensitive features.

8.3.43 Several non-statutory habitat sites have been assessed for both nutrient nitrogen and acid deposition, due to the proximity of these sites to the Proposed Development Site. These include LWSs and LNRs. For these sites, there is no data available on APIS with regards to habitat types present and therefore the relevant critical loads class to be applied, and therefore process contributions have been considered against an appropriate critical load determined for the appropriate habitat type as informed by Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2).

8.3.44 An assessment of cumulative impacts with other proposed developments that could interact with the operational impacts and effects of the Proposed Development has been carried out and presented in Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4) and summarised in Chapter 23: Cumulative and Combined effects (ES Volume I, EN070009/APP/6.2). The impact of cumulative operational emissions of nutrient nitrogen deposition on habitats is also considered in the Habitat Regulations Assessment Report.

Value/ Sensitivity of Receptors

8.3.45 The receptor sensitivity definitions for impact from dust emissions is provided in the accompanying technical appendix, in Section 8A.4 (Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4)).

8.3.46 The receptor sensitivity definitions for impact from traffic is provided in the accompanying technical appendix, in Section 8A.5 (Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4)). The receptor sensitivity definitions for impact from operations is provided in the accompanying technical appendix, in Section 8B.4 (Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4)).

8.3.47 Details on the sensitivity of ecosystems is provided within Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2).

Magnitude of Impacts

8.3.48 The magnitude of impact from dust emissions is discussed in the Evaluation of Significance – Construction Phase Dust Assessment Section, alongside the significance criteria.

8.3.49 The magnitude of impact from traffic and operational emissions is defined by the change in predicted model concentrations and discussed in the Evaluation of Significance – Traffic and Operational Emissions Assessment, alongside the significance criteria.

Significance Criteria

8.3.50 Impacts are defined as changes arising from the Proposed Development, and consideration of the result of these impacts on environmental receptors enables

the identification of associated effects, and their classification (major, moderate, minor and negligible, and adverse, neutral or beneficial).

8.3.51 The significance of an effect, and whether an effect is regarded as 'significant' for assessment purposes, is determined as a factor of the magnitude of the impact and the sensitivity of associated receptors.

8.3.52 The following terminology has been used in the assessment to define effects:

- adverse – detrimental or negative effects to an environmental resource or receptor;
- neutral – effects to an environmental resource or receptor that are neither adverse nor beneficial; or
- beneficial – advantageous or positive effect to an environmental resource or receptor.

8.3.53 The effect resulting from the combination of magnitude and sensitivity is classified using the matrix presented in Table 8-3 (also in Chapter 2: Assessment Methodology (ES Volume I, EN070009/APP/6.2)), where necessary also considering the context of the environment.

Table 8-3: Classification of effects (significant effects shown in bold)

SENSITIVITY OF RECEPTOR/ MAGNITUDE OF IMPACT	CLASSIFICATION OF EFFECT			
	HIGH	MEDIUM	LOW	NEGLIGIBLE
HIGH	Major	Major	Moderate	Minor
MEDIUM	Major	Moderate	Minor	Negligible
LOW	Moderate	Minor	Negligible	Negligible
NEGLIGIBLE	Minor	Negligible	Negligible	Negligible

Evaluation of Significance – Construction Phase Dust Assessment

8.3.54 For potential amenity effects, such as those related to dust deposition, the aim is to bring forward a Proposed Development that includes mitigation measures as necessary, that minimises the potential for amenity, human health and ecological impacts as a result of the construction works.

8.3.55 The IAQM guidance (IAQM, 2024) 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 effects on receptors. The guidance indicates that application of appropriate mitigation (refer to Section 8.5) should ensure that residual effects will normally be Not Significant.

Evaluation of Significance – Traffic and Operational Emissions Assessment

8.3.56 The evaluation of the significance of air quality effects from the traffic and operational point sources is based on the criteria referenced in IAQM/EPUK guidance (IAQM, 2017), and in the Environment Agency Air Emission risk assessments for your environmental permit guidance (Defra and Environment Agency, 2016, as updated in 2023). The predicted changes in pollutant concentrations can be compared to AQALs to determine the magnitude of change.

8.3.57 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 (refer to Table 8-4) of such impacts. This terminology has been changed where appropriate to maintain consistency with the rest of this ES– where the IAQM uses 'substantial' this has been changed to 'Major', whilst 'slight' has been changed to 'Minor'.

Table 8-4: Air Quality Impact Descriptors for Long Term Changes in Ambient Concentrations

LONG TERM AVERAGING CONCENTRATION AT RECEPTOR	PERCENTAGE CHANGE IN ANNUAL MEAN CONCENTRATIONS (%)				
	UP TO 0.5% IMPERCEPTIBLE	0.5 – 1% VERY LOW	2-5% LOW	6-10% MEDIUM	>10% HIGH
75% or less of AQAL	Negligible	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	Negligible	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	Negligible	Minor	Moderate	Moderate	Major
103-109% of AQAL	Negligible	Moderate	Moderate	Major	Major
110% or more of AQAL	Negligible	Moderate	Major	Major	Major
AQAL = Air Quality Assessment Level (NAQS objective or EU Limit Value or Environmental Assessment Level)					

8.3.58 The IAQM guidance (IAQM, 2017) is not explicit in the identification of whether any of the above impact descriptors should be considered 'Significant' or 'Not Significant' effects, rather it indicates that the descriptors should be applied to individual receptors and a 'Moderate' adverse impact at one receptor may not mean that the overall impact has a 'Significant' effect; other factors need to be considered. However, the guidance does indicate that 'Negligible' impacts are likely to lead to effects that are 'Not Significant' and that 'Major' impacts describe the

potential for 'Significant' effects. The judgment of significance of effects adopted within this assessment is discussed below.

8.3.59 The Environment Agency EPR Risk Assessment screening criteria for comparison of Process Contributions (PCs) with AQAL states that an emission may be considered not significant (or negligible) where:

- short term PC <=10% of the AQAL; and
- long term PC <=1% of the AQAL.

8.3.60 Where an emission cannot be screened out as not significant, the second stage of screening considers the PCs in the context of the existing background pollutant concentrations; the predicted environmental concentration (PEC) is considered acceptable where:

- short term PC <20% of the short-term AQALs minus twice the long-term background concentration; and
- long term PEC (PC + background concentration) <70% of the AQALs.

8.3.61 Where the PEC is not predicted to exceed the AQAL, and the proposed emissions comply with the BAT associated emission levels (or equivalent requirements), the emissions are considered acceptable by the Environment Agency.

8.3.62 The IAQM guidance indicates that the Environment Agency threshold criterion of 10% of the short term AQAL is sufficiently small in magnitude to be regarded as having an 'not significant' effect. The IAQM guidance expands on the Environment Agency guidance (discussed below) with respect to the background contribution; the IAQM guidance indicates that severity of peak short-term concentrations can be described without the need to reference background concentrations as the PC is used to measure the impact, not the overall concentration at a receptor. The peak short-term PC from an elevated source is described as follows:

- PC <=10% of the AQAL is negligible in magnitude representing a not significant impact;
- PC 11-20% of the AQAL is small in magnitude representing a 'slight' (Minor) impact, which is not significant;
- PC 21-50% of the AQAL is medium in magnitude representing a Moderate impact, which may be significant; and
- PC >51% of the AQAL is large in magnitude representing a 'substantial' (Major) impact, which may be significant.

8.3.63 The impact of point source emissions on ecological receptors, through deposition of nutrient nitrogen or acidity, can be evaluated using the Environment Agency and Natural England's threshold for insignificance criterion of 1% of the long-term objective, as above.

8.3.64 Where emissions are not screened as not significant (Negligible), the descriptive terms for the air quality effect outlined in Table 8-4 above can be applied. Additionally, where air quality effects cannot be screened as not significant at

designated ecosystem sites then further evaluation is required by biodiversity specialists. This is provided within Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2) and the Report to Inform Habitats Regulations Assessment Report (EN070009/APP/5.10).

Evaluation of Significance for Proposed Development/Overall Assessment

8.3.65 Following the assessment of each air quality effect, the significance of all reported effects is then considered for the Proposed Development as a whole. This overall assessment accounts for construction impacts occurring at different times. The potential for the Proposed Development to contribute to or interfere with local policies and strategies relevant to air quality are also considered, if relevant, but the principal focus is the change to likely future achievement of air quality standards/national targets.

8.3.66 In terms of the significance of the adverse effects associated with impacts, an effect is reported as being either 'significant' or 'not significant' based on the classification outlined in Table 8-3.

Cumulative Air Quality Effects

8.3.67 An assessment of cumulative air quality effects has been undertaken and is detailed within Chapter 23: Cumulative and Combined Effects (ES Volume I, EN070009/APP/6.2).

8.3.68 The assessment of cumulative effects follows the methodology described in Advice Note Seventeen (The Inspectorate, 2019a), for more information refer to Chapter 23: Cumulative and Combined Effects (ES Volume I, EN070009/APP/6.2).

8.3.69 The impact of cumulative operational emissions on nutrient nitrogen deposition on habitats is also considered in the Report to Inform Habitats Regulations Assessment Report (EN070009/APP/5.10)

Sources of Information/ Data

8.3.70 The following sources of information have been reviewed and have informed the assessment:

- The construction traffic parameters for the modelling of emissions have been sourced from vehicle movement data during the construction phase provided by the Applicant and baseline data collected during surveys, as summarised in Chapter 14: Traffic and Transportation (ES Volume I, EN070009/APP/6.2). Emissions have been calculated based on the construction traffic data and construction phase information provided by the Applicant and are summarised in Appendix 8A: Air Quality – Construction Assessment (ES Volume II, EN070009/APP/6.3).
- The physical parameters for the modelling of emissions from the Proposed Development's point sources have been sourced from the concept design data provided by the Applicant and are summarised in Appendix 8B: Air Quality – Operational Phase (ES Volume II, EN070009/APP/6.3).

8.3.71 The dispersion modelling of point source emissions takes into consideration the sensitivity of predicted results to model input variables, and to ultimately identify the realistic worst-case results for inclusion in the assessment. These variables include:

- meteorological data, for which five years' recent data (2018 to 2022) from representative meteorological station (Durham Teesside Airport); and
- inclusion of buildings, structures and local topography that could affect dispersion from the source into the modelling scenarios.

Consultation

Scoping Opinion

8.3.72 An EIA Scoping Opinion was requested from the Inspectorate on 6 April 2023. A response was received on 17 May 2023. For the Scoping Opinion and the Applicant's responses to them, refer to Appendix 1E (ES Volume III, EN070009/APP/6.4).

Statutory Consultation

8.3.73 The PEI Report was published for statutory consultation on 14 September 2023 and the consultation period ended on 26 October 2023. A second statutory consultation was held between 13 December 2023 and 23 January 2024, and additional targeted consultation was held between 9 February 2024 and 10 March 2024. The matters raised have been reviewed and an explanation of how the Applicant has had regard to them is set out in the Consultation Report (EN070009/APP/5.1). Refer to Table 8-5 for a detailed summary of Statutory Consultation feedback relevant to this chapter from Statutory Environmental Bodies and the Applicant's responses.

Table 8-5: Responses to the Statutory Consultation Feedback

CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/HOW COMMENTS HAVE BEEN ADDRESSED
Environment Agency	26/10/23	Air Quality Air quality effects during construction should include those during the commissioning of the plant and include emissions during the tuning and optimisation of the process. These effects during the commissioning process should be considered separate to the effects during normal operations, where the process has been optimised and emissions are at a steady state and are understood. Appendix 8 (Air Quality) Table 8B-14 gives Nitrogen oxides (NOx) concentrations from the Air Pollution Information System (APIS) website. APIS NOx data currently uses 2019-2021 3-year averages. This information is therefore slightly out of date and may impact results. The ES should use 2020-2022 data, if it has been released. It is a possibility that the proposed influx of decarbonising processes to the Tees Cluster area, as a result of the Northern Endurance Partnership (NEP) carbon capture gathering pipeline with offshore storage and the H2	Air Quality An updated air quality assessment is included in Chapter 8: Air Quality (ES Volume I, EN070009/APP/6.2). The Applicant has also begun engagement with the Environment Agency under the enhanced pre-application scheme and is finalising an application for an Environmental Permit anticipated to be submitted in 2024. The permit will deal with the commissioning phase through a requirement for a Commissioning Plan. The Environmental Statement used the latest Air Pollution Information System information available at the time of the assessment. The Applicant is engaged with the Environmental Capacity in Industrial Clusters project and participated in the recent workshops run by the Environment Agency in collaboration with the Carbon Capture and Storage Association, Hydrogen UK and Hydrogen Energy Association. Phase 3 of the project is currently at the evidence gathering stage and has not reported on findings to date. Stack design The Applicant notes that the stack diameter and air emissions sampling location and monitoring platform design are to be considered along with stack heights. These aspects will be considered as part of the design and engineering process for the Proposed Development. Relevant parameters are controlled through the DCO.

CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/HOW COMMENTS HAVE BEEN ADDRESSED
		distribution pipeline, may result in an increase in polluting emissions to air rather than a decrease, as proposed in PEIR Chapter 8 paragraph 8.4.15. Phase 3 of the EA/Department for Energy Security and Net Zero Environmental Constraints Project will look at air quality impacts of carbon capture, hydrogen production and hydrogen use within the Tees Industrial Cluster, with the conclusions due in early 2024. The applicant may find the results of this report useful. Stack design PEIR Chapter 8 Paragraph 8.5.10 discusses optimising stack heights. In order to ensure the stack height of the DCO is appropriate, consideration should be given at an early stage to the stack diameter, air emissions sample point location and monitoring platform design.	

Use of the Rochdale Envelope

8.3.74 To ensure a robust assessment of the likely significance of the environmental effects of the Proposed Development, the EIA is being undertaken adopting the principles of the 'Rochdale Envelope' approach where appropriate in line with the Planning Inspectorate's ('the Inspectorate's') Advice Note 9 (The Inspectorate, 2018). This involves assessing the maximum (or where relevant, minimum)/ realistic worst-case parameters for the elements where flexibility needs to be retained (building dimensions or operational modes for example).

8.3.75 For the operational assessment, the plant will be subject to further detailed design. Worst case emissions leading to the worst case predicted impacts have been used in the assessment to be reported in this ES to ensure that it comprises a conservative assessment.

8.3.76 The Proposed Development has been assumed to be running 24 hours a day for 8,760 hours per year. Assuming continuous operation throughout the year is considered to lead to worst-case annual average air quality impacts.

8.3.77 The building dimensions and positioning included within the assessment are based on available information within the concept design for the Proposed Development, including Phase 1 and 2 buildings, but sensitivity tests have been carried out to consider changes in building sizes and locations, as detailed in Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4).

8.3.78 The sensitivity test shows that the stack position and presence of buildings have a less marked effect on the predicted process contributions than the meteorological data.

8.3.79 The inclusion of buildings in the model and the stack position slightly affects the model outcomes. However, the testing demonstrates that varying individual parameters would still not result in significant effects at sensitive human health or ecological receptors.

Assumptions and Limitations

Assumptions

8.3.80 In line with the Inspectorate's guidance (The Inspectorate, 2018), the following assumptions have been made with regard to the construction phase of the Proposed Development:

- peak construction traffic flows assumed for a full calendar year.

8.3.81 To minimise the likelihood of under-estimating the PC to ground level concentrations from the main stack, the following conservative assumptions have been made for the operational phase of the Proposed Development:

- continuous operation i.e. for 8,760 hour per year for the Proposed Development when both Phase 1 and 2 are developed (i.e. the Proposed Development is fully built out) will represent the reasonable worst-case; in practice, the plant would require routine maintenance periods;

- the modelling predictions are based on the use of five full years of meteorological data from Durham Tees Valley Airport meteorological station for the years 2018 to 2022 inclusive, with the highest result being reported for all years assessed; This is considered to be conservative;
- the modelling is based on the layout and dimensions available at the time of the assessment; it is not proportionate to sensitivity test all the different building locations. The effect of buildings on pollutant dispersal is greatest in the immediate area within the site. It is considered unlikely that alterations to building layouts and dimensions would notably change offsite operational predictions of pollutant contributions and therefore effects are unlikely to change from not significant; and
- emission concentrations for the process are calculated based on the use of IED limits, Best Available Techniques Achievable Emission Limits (BAT-AEL) concentrations, or maximum envisaged emission rates from licensors; in practice annual average rates would be below this to enable continued compliance with environmental permit requirements..

8.3.82 Given the above, this assessment presents a reasonable 'worst-case' approach.

Limitations

8.3.83 Until the exact configuration is selected, there will be some degree of uncertainty in the operational emissions used in the assessment. Therefore, in order to minimise the likelihood of under-estimating the predicted impacts for the operational emissions, a number of conservative assumptions have been made in the assessment, as set out above in the assumptions section

8.3.84 There is also uncertainty associated with any modelling assessment, due to the inherent uncertainty of the dispersion modelling process itself. Despite this, the use of dispersion modelling is a widely applied and accepted approach for the prediction of impacts from industrial sources.

Construction

8.3.85 The construction phase air quality assessment is based on the information available at the time of the assessment. Further details regarding construction methods will become available as the Proposed Development design further develops and conclusions of the assessments will then be re-assessed to ensure that they are still valid.

Operation

8.3.86 The data used to assess the operation emissions of the Proposed Development is based on the information available at the time of the assessment. Air quality modelling of emissions has been assessed for the Proposed development and other committed developments.

Decommissioning

8.3.87 There are no significant limitations associated with the decommissioning phase air quality assessment.

8.4 Baseline Conditions

Existing Baseline

Sensitive Receptors

8.4.1 Based on IAQM guidance (IAQM, 2024), receptors potentially affected by dust soiling and short-term concentrations of PM_{10} generated during construction activities are limited to those located within 250 m of the nearest construction activity, and/or within 50 m of a public road used by construction traffic that is within 250 m of the construction site entrances. Ecological receptors are limited to those located within 50 m of the nearest construction activity and/or within 50 m of a public road used by construction traffic that is within 250 m of the construction site entrances.

8.4.2 The construction area spreads on both sides of the River Tees. Representative receptors are those closest to the Proposed Development Site boundary and are predominantly commercial and industrial properties located within the existing industrial area adjacent to the Proposed Development Site, each side of the A1085 between Middlesborough and Redcar, around the river docks and east of Stockton on Tees. There are also some high sensitivity residential properties near the edge of the Proposed Development Site boundary in Redcar (including Coatham), in the northern extent of Billingham, close to the A1185, and on Cowpen Lane in Cowpen Bewley. Other less sensitive receptors in the area include recreational areas such as Cowpen Bewley Woodland Park.

8.4.3 Receptors potentially affected by the exhaust emissions associated with construction phase vehicle movements are those located within 200 m of a public road used by construction traffic to access the Proposed Development Site.

8.4.4 Receptors potentially affected by operational emissions from the Proposed Development including local residential and amenity receptors (identified as “recreational” receptor type in Table 8-6) that have been identified through site knowledge, desk study of local mapping and consultation. Through the dispersion modelling, gridded outputs of pollutant concentrations have been examined to identify the receptors that will receive the highest point source contributions so that the assessment of impacts can be made at these receptors.

8.4.5 Ecological receptors potentially affected by operational emissions have been identified through a desk study of Defra Magic mapping (Defra, n.d.) and consultation and discussions with the AECOM biodiversity team (see Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2), Chapter 13: Ornithology (ES Volume I, EN070009/APP/6.2), Chapter 14: Marine Ecology (ES Volume I, EN070009/APP/6.2) and Report to inform Habitats Regulations Assessment (EN070009/APP/5.10)). Statutory designated sites including SACs, SPAs, Ramsar sites and SSSIs up to 15 km from the Proposed Development Site have been considered. Several non-statutory designated sites including LNRs and LWSs within 2 km have also been considered. Further details of these sites and reasons for their designations are provided in Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2).

8.4.6 Identified receptors are detailed in Table 8-6, for construction (Human Health Road Traffic Receptor 'R', 'RE' for ecology) and operational phases (Human Health Operational Receptor 'O', 'OE' for ecology) and these are shown in Figures 8-1: Air Quality Study Area – Human Health Receptors, Monitoring, Figure 8-2: Air Quality Study Area – Ecological Receptors and Figure 8-3: Air Quality Study Area – Construction (ES Volume II, EN070009/APP/6.3). The distances to the receptors from the Proposed Development Site as associated with the construction phase are provided in Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4). For RE receptors, the coordinate displayed in the table below is of the closest point to the modelled road, other points were also model to form a transect up to 200 m from the road's edge.

Table 8-6: Selected Receptors

ID	RECEPTOR NAME	RECEPTOR TYPE	GRID REFERENCE (BRITISH NATIONAL GRID)	
			X	Y
R001	Saltview Terrace, Stockton-on-Tees	Residential	450068	521631
R002			450049	521620
R003	High Clarence Primary School, Port Clarence Road	School	449463	521974
R004	2 Fieldview Close, Stockton-on-Tees	Residential	449092	522334
R005	87 Broadway, Middlesbrough	Residential	455429	520571
R006	51 Eversham Road, Middlesbrough	Residential	455434	520610
R007	Grangetown Primary School, St Georges Rd W, Middlesbrough	School	455189	520409
R008	139 Bolckow Road, Grangetown	Residential	455306	520890
R009	8 St Nicholas Close, Grangetown	Residential	454846	520708
R010	2 Kirkleatham Lane, Redcar	Residential	459216	524569
R011	4 Corporation Road, Redcar	Residential	459262	524598
R012	2 Keepersgate, Eston	Residential	456153	518576
R013	19 Moorgate, Middlesbrough	Residential	456240	519019
R014	19 Gaisdale Close, Middlesbrough	Residential	456043	518989
R015	239 Wychgate, Middlesbrough	Residential	456119	518963
R016	23 High Street, Middlesbrough	Residential	456477	519134
R017	North Lodge, Wilton, Lazenby, Redcar	Residential	458240	520240

ID	RECEPTOR NAME	RECEPTOR TYPE	GRID REFERENCE (BRITISH NATIONAL GRID)	
			X	Y
R018	Wilton Primary School, 12 High Street, Lazenby	School	457463	519859
R019	2 Grange Estate, Middlesbrough	Residential	457559	519861
R020	Brookfield Care Home, High Street, Lazenby	Care Home	457455	519763
R021	10 Chestnut Close, Middlesbrough	Residential	457311	519649
R022	Police House, Eston Road, Lazenby	Residential	457016	519403
O1	Marsh Farm House, Warrenby Road, Coatham, Redcar	Residential	457950	525045
O2	Cleveland Golf Links, Coatham, Redcar	Recreational	458090	525550
O3	South Gare Fishermans Association, Redcar	Recreational	455680	527395
O4	Marine Club, Redcar	Recreational	455550	527345
O5	Tingdene Beach Caravan Park, Coatham, Redcar	Recreational	458675	525415
O6	120 Broadway W, Dormanstown, Redcar	Residential	457895	523735
O7	68 York Rd, Coatham, Redcar	Residential	458900	525060
O8	Dormanstown Primary Academy, Redcar	School	458250	523585
O9	Coatham Church of England School, Coatham, Redcar	School	459195	524980
RE001	Teesmouth and Cleveland Coast SSSI and SPA	Ecological	450640	523527
RE002	Teesmouth and Cleveland Coast SSSI and SPA and Coatham Marsh LWS	Ecological	458966	524537
RE003	Teesmouth and Cleveland Coast SSSI	Ecological	457334	525348
RE004	Charlton's Pond LNR	Ecological	446972	523081
RE005	Teesmouth and Cleveland Coast SSSI and SPA	Ecological	450050	521413

ID	RECEPTOR NAME	RECEPTOR TYPE	GRID REFERENCE (BRITISH NATIONAL GRID)	
			X	Y
RE006	Teesmouth and Cleveland Coast SSSI, RAMSAR and SPA	Ecological	450744	522993
RE007	Teesmouth and Cleveland Coast SSSI, RAMSAR and SPA	Ecological	450758	522995
RE008	Teesmouth and Cleveland Coast SSSI and SPA	Ecological	450997	523670
RE009	Teesmouth and Cleveland Coast SSSI and SPA	Ecological	450050	521413
RE010	Wilton Woods Complex LWS	Ecological	456441	518679
OE1	Teesmouth and Cleveland Coast Ramsar, SPA and SSSI	Ecological	457283*	526000*
OE2	Teesmouth and Cleveland Coast SPA and SSSI	Ecological	456300*	526098*
OE3	Coatham Marsh LWS and Teesmouth and Cleveland Coast SPA and SSSI	Ecological	457860*	524991*
OE4	Eston Pumping Station LWS	Ecological	456474*	523797*
OE5	Teesmouth NNR	Ecological	454525*	527129*
OE6	Teesmouth and Cleveland Coast SSSI	Ecological	455835*	526155*
OE7	North York Moors SPA and SSSI	Ecological	462481	513981
OE8	North Cumbria Coast SPA, Durham Cost SAC, Northumbria Coast Ramsar	Ecological	448225	537450
OE9	Cliff Ridge SSSI	Ecological	457283	511718
OE10	Durham Coast SSSI and Durham Coast NNR	Ecological	448796	536560
OE11	Durham Coast SSSI	Ecological	449483	536169
OE12	Hart Bog SSSI	Ecological	445293	535376
OE13	Langbaurgh Ridge SSSI	Ecological	455524	512382
OE14	Lovell Hill Pools SSSI	Ecological	459643	519105
OE15	Roseberry Topping SSSI	Ecological	457878	512782
OE16	Saltburn Gill SSSI	Ecological	467005	521269

**Coordinates for the closest point to the Proposed Development; results presented throughout this chapter and associated appendices are of the maximum impact anywhere within each site, so exact coordinates can vary.*

Baseline Air Quality

8.4.7 Existing air quality conditions in the vicinity of the Proposed Development Site have been evaluated through a review of local authority air quality management reports, Defra published data and other sources. The key pollutants of concern resulting from construction and operation of the Proposed Development are NO_x, NO_2, CO, SO_2, and PM (PM_{10} and $PM_{2.5}$), and therefore the assessment of baseline conditions only considers these pollutants. Data on NH_3 is not presented as this is associated with the start-up process only and as this is a short term event that is not considered to have a significant long term effect on designated ecosystem sites described in paragraph 8.3.36.

8.4.8 There are no AQMAs designated within the administrative boundary of RCBC or the adjoining local authority areas of HBC and STBC. As the closest AQMA is 20 km to the south-east of the Proposed Development Site (in Staithes), it is considered that the Proposed Development will not impact upon the air quality within any AQMA.

8.4.9 RCBC has one continuous monitoring station at Dormanstown focusing on emissions from the industrial complexes located along the River Tees. The monitor is located in the grounds of Dormanstown Primary School, in an area of relevant public exposure, and is regarded as a key site within the Tees Valley for industrial pollution monitoring.

8.4.10 The annual means for NO_2 and NO_x for 2019 at the Dormanstown monitor were 9 $\mu g/m^3$ and 13 $\mu g/m^3$ respectively, indicating that background concentrations are well within the annual average AQAL. The annual mean for PM_{10} was 14 $\mu g/m^3$.

8.4.11 In addition, RCBC undertook NO_2 diffusion tube monitoring at 16 sites during 2019, including a number of co-located tubes at the Dormanstown continuous monitor. Apart from the Dormanstown site tubes, which are classified as suburban, the remaining 15 sites are located at roadside locations. The results of the diffusion tube monitoring indicate that air quality in the borough is of a good quality, and well within the annual AQAL.

8.4.12 A number of NO_2 diffusion tubes were deployed in the air quality Study Area in order to supplement the available data and to aid traffic air quality model verification. The diffusion tube survey commenced in July 2022 and ceased in October 2022. Data from the diffusion tube survey are presented in Table 8-7.

8.4.13 A second survey was conducted for three months in 2023, from mid-June to mid-September, to confirm the air quality in the area had not changed substantially since the initial survey. Results show the NO_2 concentration in the area has been relatively stable.

8.4.14 The locations of all the monitoring sites (diffusion tubes) used in the assessment are shown in Figure 8-1: Air Quality Study Area – Human Health Receptors and Monitoring (ES Volume II, EN070009/APP/6.3).

Table 8-7: Air Quality Monitoring Survey Data

SITE ID	SITE TYPE	GRID REFERENCE (BRITISH NATIONAL GRID)		2019* ANNUAL MEAN CONCENTRATION (µg/m^3)
		X	Y	
DT1	Roadside	457401	523654	29.7
DT2	Roadside	457667	523958	44.3
DT3	Urban Background	459008	524872	18.2
DT4	Roadside	455455	520616	20.9
DT5	Roadside	455431	520975	21.8
DT6	Roadside	455949	521326	49.7
DT7	Roadside	457131	519556	29.7
DT8	Roadside	456466	519123	21.8
DT9	Urban Background	455100	517473	16.2
DT10	Urban Background	453905	517394	12.2
DT11	Urban Background	455488	519463	14.5
DT12	Urban Background	457237	519877	11.4
DT13	Co-location	458147	523551	19.3
DT14	Ecological	453310	528182	15.1
DT15	Ecological	457341	525680	20.7
DT16	Ecological	456650	525953	18.8
DT17	Ecological	456323	526112	19.9
DT18	Roadside	449399	522028	25.3
DT19	Urban Background	449091	522434	16.5
DT20	Ecological	450821	525066	19.2
DT21	Roadside	449943	521663	25.3

*Note: Bold denotes an exceedance of an air quality objective value. *Concentrations are provided for 2019 to match the year of the baseline traffic assessment, the annualisation process is detailed in Appendix 8A.*

8.4.15 Annual mean NO_2 concentrations when annualised back to 2019 resulted in two exceedances of the annual mean NO_2 objective of 40 µg/m^3, recorded at DT2 and DT6, with concentrations of 44.3 µg/m^3 and 49.7 µg/m^3, respectively. Both

locations are near industrial areas, therefore higher concentrations are expected due to the increased vehicle movements of HGVs which are associated with greater NO_2 emissions compared to other vehicles. There are no relevant human exposure receptors at these locations.

8.4.16 In addition to specific air quality monitoring data in the air quality study area for some pollutants further background data is also available for NO_x, NO_2, CO, SO_2, and PM (PM_{10} and $PM_{2.5}$) from Defra. Further details of this data are presented in Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4). Local concentrations of NO_2 are discussed in detail above, baseline concentrations of the other pollutants within the study area are well within their respective AQALs.

Future Baseline

8.4.17 Background concentrations of pollutants are expected to decrease in the future due to changes in technology and the types of emission sources. However, to provide a conservative prediction of pollutant concentrations in the future, the current baseline background concentrations will be used for the future operational assessment scenarios, assuming no decrease in background concentrations. Similarly, for the assessment of the construction phase, current background concentrations have been used.

8.5 Proposed Development Design and Impact Avoidance

8.5.1 The EIA process aims to avoid, prevent, reduce or offset potential environmental effects through design and/or management measures. These are measures that are inherent in the design and construction of the Proposed Development (also known as 'embedded measures').

8.5.2 The following impact avoidance measures have either been incorporated into the design or are standard construction or operational practices. These measures have, therefore, been taken into account during the impact assessment and will be secured through a Requirement of the Draft DCO (EN070009/APP/4.1).

Construction

8.5.3 The Framework Construction Environmental Management Plan (CEMP) (EN070009/APP/5.12) sets out the key measures to be employed during the construction of the Proposed Development, to control and minimise air quality and dust impacts on the environment. The Framework CEMP will set out how impacts upon sensitive receptors will be managed during construction. A Final CEMP(s) will be prepared by the EPC Contractor(s) in accordance with the Framework CEMP prior to construction. The submission, approval, and implementation of the Final CEMP(s) will be secured by a Requirement of the Draft DCO (EN070009/APP/4.1). Additionally, a Final Construction Workers Travel Plan (CWTP) and Final Construction Traffic Management Plan (CTMP), will be developed.

8.5.4 Emissions of dust and particulates from the construction phase of the Proposed Development will be controlled in accordance with industry good practice, through incorporation of appropriate control measures according to the risks posed by the activities undertaken, as determined through this assessment process. The

management of dust and particulates and application of adequate mitigation measures will be enforced through the Final CEMP(s).

8.5.5 Based on an initial assessment of the area, of its sensitivity to dust impacts and the likely risk of impacts arising from each of the key construction activities (earthworks, construction and 'trackout' of material onto roads (see Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4)), potential appropriate embedded measures to be implemented during construction (good site techniques drawn from the 'high risk' site schedule in IAQM guidance (IAQM, 2024)) that have been identified are:

- avoid mechanical roughening or grinding of concrete surfaces;
- store sand and aggregates in bunded areas and store cement powder and fine materials in silos;
- use water suppression and regular cleaning to minimise mud on roads, and control dust during earth moving activities;
- cover vehicles leaving the construction site that are carrying waste materials or spoil;
- employ wheel wash systems at site exits;
- restrict where practicable the use of unmade road accesses;
- minimising duration of storage of topsoil or spoil during pipeline construction; and
- prohibit open fires on-site.

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

- minimise vehicle and plant idling; and
- where possible, locating static plant away from sensitive boundaries or receptors.

Operation

IED / BAT-AEL Emission Limit Value (ELV) Compliance

8.5.7 The Hydrogen Production Facility will require an Environmental Permit and will comply with this under the Environmental Permitting (England and Wales) Regulations 2016. In addition, the Proposed Development will be operated in line with appropriate standards. The operator will implement and maintain an Environment Management System (EMS) which will conform with International Standards Organisation (ISO) 14001. The EMS will outline requirements and procedures required to ensure that the Proposed Development Site is operating to the appropriate standard.

8.5.8 The Proposed Development will be designed such that process emissions to air comply with the ELV requirements as specified in the environmental permit. The applicable ELV requirements as per the emerging techniques for hydrogen

production with carbon capture guidance will form part of the Environmental Permit Application. The Environment Agency will then regulate the operation of the Proposed Development.

8.5.9 The Applicant has also begun engagement with the Environment Agency under the enhanced pre-application scheme and is finalising an application for an Environmental Permit anticipated to be submitted in 2024.

Stack Heights

8.5.10 The fired heater (for start-up only), auxiliary boiler and flare stack heights for the Proposed Development have been assessed as a worst case, with consideration given to minimisation of ground-level air quality impacts and the visual impacts of taller stacks based on the current concept design layout of the main structures of the Proposed Development.

8.5.11 Dispersion modelling has been undertaken to determine the optimum stack heights at the current stage of design, through comparison of the maximum impacts at human health and ecological receptors, to ensure that the impacts at sensitive receptors will be considered to be acceptable. For the flare, the final release height is based on the results of the stack height assessment with the flare in emergency mode, as well as consideration of the minimum release height required for safety and design reasons.

8.5.12 Details of the stack height determination results are presented in Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4).

Decommissioning

8.5.13 A Decommissioning Environmental Management Plan (DEMP) would be produced pursuant to a DCO Requirement. The DEMP would consider in detail all potential environmental risks on the Proposed Development Site and contain guidance on how risks can be removed or mitigated. This will include details of how surface water drainage should be managed during decommissioning and demolition. The DEMP would be secured by a Requirement on the Draft DCO (EN070009/APP/4.1). A Decommissioning Environmental Management Plan would also include an outline programme of works.

8.5.14 At the end of its design life decommissioning of the Proposed Development will see the removal of all above ground equipment down to ground level and the ground remediated to enable future industrial/commercial re-use. It is assumed that all underground infrastructure will remain in-situ; however, all connection and access points will be sealed or grouted to ensure disconnection.

8.5.15 The predicted air quality effects of decommissioning of the Proposed Development are considered to be comparable to, or less than, those assessed for construction activities.

8.6 Impacts and Likely Significant Effects

Construction

Assessment of Construction Dust

8.6.1 A risk-based assessment methodology has been used to assess the likelihood and scale of dust impact on sensitive receptors located in the vicinity of the Proposed Development Site (including consideration of nearby amenity areas). Further details of the assessment can be found in Appendix 8A: Air Quality – Construction Assessment (ES Volume III, EN070009/APP/6.4). Demolition and site clearance of the Main Site will be undertaken prior to the main works, and these do not form part of this air quality assessment. The assessment comprises a review of the impacts of dust emissions from the various activities, namely earthworks (including remediation), trackout and construction.

8.6.2 The evaluation of expected dust arisings from the proposed construction and demolition works has shown that without mitigation there could be a short-term Negligible to Medium impact of dust emissions associated with the construction phase on human health and a potential High impact on ecological receptors, namely the Teesmouth and Cleveland Coast SSSI/SPA/Ramsar, resulting in a potential Significant effect. The more at-risk human health receptors are residential properties in Dormanston, less than 20 m from the Proposed Development Site boundary. However, through the implementation of the measures set out in section 8.5, dust effects on sensitive receptors are considered to be Not Significant.

Assessment of Construction Traffic

8.6.3 Appendix 8A: Air Quality – Construction Assessment, Tables 8A-18 to 8A-20 (ES Volume III, EN070009/APP/6.4) shows the predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive human health receptors along routes anticipated to be utilised by construction traffic. The appendix also includes predicted annual mean concentrations of NOx and nitrogen deposition at sensitive ecological receptors in Tables 8-21 and 8-22. Please see Table 8-6, Figure 8-1: Air Quality Study Area Human Health Receptors and Monitoring (ES Volume II, EN070009/APP/6.3) and Figure 8-3: Air Quality Study Area Construction (ES Volume II, EN070009/APP/6.3) for further details of the receptors modelled and Chapter 15: Traffic and Transportation (ES Volume I, EN070009/APP/6.2) for further details of construction traffic movements.

8.6.4 The construction traffic air quality assessment is based on Peak Construction Scenario (month 17 of construction) indicates that the impact at all human receptors can be considered Negligible. This is as both the change between the with and without the Proposed Development scenarios for all receptors is less than 1% of the AQAL and all receptors are below 75% of the AQAL.

8.6.5 Despite there being some sensitive human receptors along roads where construction traffic will be present, the largest change in AADT flow occurs on the unnamed road that connects the Proposed Development Site with the road network where there are no adjacent human receptors. The effect of construction

traffic on air quality at human health receptors is therefore Negligible and Not Significant.

8.6.6 For all ecological receptors but RE008 (part of the Teesmouth and Cleveland SSSI and SPA north of the River Tees), 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 NOx concentrations. At RE008, the change in concentration at 0 m from the road is predicted to be 1.5% of the environmental standard, down to 0.7% at 10 m from the road. The total NOx concentration at RE008 is 78.4% of the standard at 0 m from the road and 61.9% at 10 m from the road. The significance of effects associated with emissions from construction traffic on designated nature conservation sites is discussed in Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2) and the Report to Inform Habitats Regulations Assessment Report (EN070009/APP/5.10) and has been judged as an effect that is Not Significant.

8.6.7 Nutrient nitrogen deposition impacts do not exceed 1% of the environmental standards at any ecological receptors and can therefore be screened as not significant without need for further assessment.

Operation

8.6.8 The impact of point source emissions at human health receptors has been determined from model outputs at discrete receptor locations.

8.6.9 The maximum hourly, daily and annual mean predicted concentrations at human health receptors have been compared with the relevant AQALs, as summarised in Table 8-8. Any inconsistencies between the PEC (i.e. the process contribution, existing background concentration and the process contributions of other committed developments) and the predicted changes combined with the future year without development concentrations are due to rounding only.

8.6.10 The results have been initially presented as the maximum concentration that occurs at sensitive receptors. The predicted concentrations at locations within the Study Area have been reported in Appendix 8B: Air Quality – Operational Phase, Tables 8B-14 to 8B-17 (ES Volume III, EN070009/APP/6.4), as well as the detailed concentrations at all identified receptor locations for each year modelled.

8.6.11 The impacts of all pollutants released from the Proposed Development are predicted to result in negligible adverse effects at all human health receptors within the study area, and these are considered to be Not Significant.

Table 8-8: Results of Operational Impact Assessment for Human Health Impacts

SPECIES	LOCATION	AQAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC/AQAL (%)	MAGNITUDE OF IMPACT	BACKGROUND (BC) ($\mu g/m^3$)	FUTURE YEAR WITHOUT PROPOSED DEVELOPMENT WITH BC ($\mu g/m^3$)	PEC ($\mu g/m^3$)	PEC/AQAL (%)	SIGNIFICANCE OF EFFECT
Maximum NO_2 hourly mean (as the 99.79th percentile) – Normal Operation	Most affected sensitive receptor (O3)	200	0.9	0.5%	Negligible	26.6	33.3	34.2	17.1%	Not Significant
	Maximum anywhere outside site boundary		3.1	1.6%	Negligible	26.6	30.2	33.3	16.7%	Not Significant
Maximum NO_2 annual mean	Most affected sensitive receptor (O3)	40	0.1	0.2%	Imperceptible	13.3	14.6	14.7	36.7%	Not Significant
	Maximum anywhere outside site boundary		0.3	0.8%	Very Low	13.3	14.5	14.8	37.0%	Not Significant
Maximum PM_{10} 24 Hour Mean (as the 90.41th percentile) – Normal Operation	Most affected sensitive receptor (O3)	50	0.1	0.3%	Negligible	19.2	19.2	19.4	38.7%	Not Significant
	Maximum anywhere		0.4	0.7%	Negligible	19.2	19.2	19.6	39.1%	Not Significant

SPECIES	LOCATION	AQAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC/AQAL (%)	MAGNITUDE OF IMPACT	BACKGROUND (BC) ($\mu g/m^3$)	FUTURE YEAR WITHOUT PROPOSED DEVELOPMENT WITH BC ($\mu g/m^3$)	PEC ($\mu g/m^3$)	PEC/AQAL (%)	SIGNIFICANCE OF EFFECT
	outside site boundary									
Maximum PM_{10} Annual Mean	Most affected sensitive receptor (O3)	40	<0.1	0.1%	Imperceptible	9.6	9.6	9.7	24.2%	Not Significant
	Maximum anywhere outside site boundary		0.1	0.3%	Imperceptible	9.6	9.6	9.7	24.3%	Not Significant
Maximum $PM_{2.5}$ Annual Mean	Most affected sensitive receptor (O3)	20	<0.1	0.2%	Imperceptible	6.3	6.3	6.4	31.8%	Not Significant
	Maximum anywhere outside site boundary		0.1	0.5%	Very Low	6.3	6.4	6.5	32.7%	Not Significant
Maximum CO 8-hour rolling average – Normal Operation	Most affected sensitive receptor (O1)	10,000	<0.1	<0.1%	Negligible	221.8	250.3	250.3	2.5%	Not Significant
	Maximum anywhere		0.1	<0.1%	Negligible	221.8	230.4	230.6	2.3%	Not Significant

SPECIES	LOCATION	AQAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC/AQAL (%)	MAGNITUDE OF IMPACT	BACKGROUND (BC) ($\mu g/m^3$)	FUTURE YEAR WITHOUT PROPOSED DEVELOPMENT WITH BC ($\mu g/m^3$)	PEC ($\mu g/m^3$)	PEC/AQAL (%)	SIGNIFICANCE OF EFFECT
	outside site boundary									
PC = Process Contribution, AQAL = Air Quality Assessment Level, BC = Background Concentration, PEC = Predicted Environmental Concentration										

8.6.12 Operational air quality results for the worst affected ecological receptor (Teesmouth and Cleveland Coast SPA, SSSI and Ramsar site, located adjacent to the Main Site) are presented in Table 8-9. Results at all other ecological receptors are presented in Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4).

Table 8-9: Results of Operational Impact Assessment for Designated Habitats

SPECIES	AQAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC/AQAL (%)	BC ($\mu g/m^3$)	FUTURE YEAR WITHOUT PROPOSED DEVELOPMENT WITH BC ($\mu G/M^3$)	PEC ($\mu g/m^3$)	PEC/AQAL (%)	SIGNIFICANCE OF EFFECT
Worst case receptor NO_x daily mean (as the 100^{th} percentile)	75	3.1	4.2%	37.2	41.9	45.0	60.0%	Not Significant

SPECIES	AQAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC/AQAL (%)	BC ($\mu g/m^3$)	FUTURE YEAR WITHOUT PROPOSED DEVELOPMENT WITH BC ($\mu G/M^3$)	PEC ($\mu g/m^3$)	PEC/AQAL (%)	SIGNIFICANCE OF EFFECT
Worst case receptor NO_x annual mean	30	0.4	1.4%	18.6	20.3	20.7	69.1%	Not Significant
Worst case receptor Nitrogen Deposition	10	0.1	0.6%	12.7	12.9	13.0	129.7%	Not Significant
Worst case receptor Acid Deposition	0.856 Min CL Min N/ 4.856 Min CL Max N / 4 Min CL Max S	0.004	<0.1%	0.9	1.0	1.0	5.6%	Not Significant

8.6.13 The annual average impacts of NO_x can be considered Not Significant, given that the PEC remains below 70% of the minimum relevant critical levels.

8.6.14 The daily NO_x concentration can also be considered Not Significant, given that the PC is less than the 10% screening criteria.

8.6.15 As the change in nitrogen deposition is predicted to be less than 1% of the minimum relevant critical load at the designated sites assessed, this is considered to be Not Significant.

8.6.16 Similarly, the change in acid deposition is predicted to be less than 1% of the minimum relevant critical load at the designated sites assessed, this is considered to be Not Significant.

8.6.17 Further details concerning air quality impacts on designated sites is discussed in Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2), Chapter 13: Ornithology (ES Volume I, EN070009/APP/6.2) and Chapter 14: Marine Ecology (ES Volume I, EN070009/APP/6.2)) and the Report to Inform Habitats Regulations Assessment Report (EN070009/APP/5.10).

Phase 1 Operation Combined with Phase 2 Enabling Works

8.6.18 As set out in Section 3: Assessment Methodology and Significance Criteria, an assessment of combined impacts from both peak construction and operational emissions (Phases 1 and 2) has been carried out to confirm no significant effects would occur during any overlap in activities. The magnitude of impacts at sensitive receptors is predicted to be below 1% of their respective AQAL for human health impacts of any pollutant. Additionally, the magnitude of impacts at sensitive receptors is predicted to be below 1% of the minimum relevant critical load for nitrogen deposition on all ecological receptors. NOx concentrations are predicted to be below 1% of the critical level at most ecological receptors, with the exception of two locations within the Teesmouth and Cleveland SSSI where concentrations are predicted to increase by up to 0.5 µg/m^3, or 1.5% (RE008 and RE003). At these two locations, the total increase in NOx, does not result in an exceedance of the critical level. The combined change is therefore Not Significant. See Appendix 8B: Air Quality – Operational Phase (ES Volume III, EN070009/APP/6.4) for further details.

Decommissioning

8.6.19 The predicted air quality effects during decommissioning of the Proposed Development are considered to be comparable to, or less than, those assessed associated with construction activities. As such, air quality effects at sensitive receptors are anticipated to be Not Significant.

8.7 Essential Mitigation and Enhancement Measures

8.7.1 Where an effect significance is determined to be Moderate or Major, mitigation measures are required. In this case no specific additional mitigation or enhancement is required for air quality with only standard mitigation required as summarised in the below sections for each stage of the Proposed Development.

Construction

Essential Mitigation

8.7.2 Mitigation of adverse significant effects on the local environment during the construction phase will be achieved principally through embedded measures identified in Section 8.5.

8.7.3 No further specific measures will be required for the mitigation of adverse effects during construction in relation to air quality on local environment.

8.7.4 Further environmental effects from the construction of the Proposed Development have been identified as not significant, based on predicted impacts at receptors. Therefore, no specific additional mitigation measures (beyond those identified in Section 8.5) have been identified as necessary for the construction phase of the Proposed Development.

Enhancement Measures

8.7.5 No specific enhancement measures have been identified as being necessary during Proposed Development construction.

Operation

Essential Mitigation

The air quality assessment of operational impacts assumes that the ELVs will be met for the operational plant as required under the IED and in accordance with use of BAT under the environmental permitting regime.

Enhancement Measures

8.7.6 No specific enhancement measures have been identified as being necessary during Proposed Development operation.

Decommissioning

Essential Mitigation

8.7.7 No specific additional mitigation measures (other than those identified in Section 8.5) have been identified as being necessary during Proposed Development decommissioning.

Enhancement Measures

No specific enhancement measures have been identified as being necessary during Proposed Development decommissioning.

8.8 Residual Effects and Conclusions

Construction

8.8.1 The air quality assessment of construction impacts assumes that the potential measures outlined within Section 8.5 will be fully implemented via the Final CEMP(s). Additionally, the Framework CEMP is accompanied by a Framework Construction Workers Travel Plan (CWTP) and a Framework Construction Traffic Management Plan (CTMP) (EN070009/APP/5.15 and EN070009/APP/5.16,

respectively). For this reason, effects associated with construction dust are anticipated to be Not Significant.

8.8.2 Despite there being some sensitive human and ecological receptors along roads where construction traffic will be present, predicted effects from the dispersion model of construction traffic on air quality are predicted to be Not Significant.

Operation

8.8.3 Operational phase traffic flows are below applicable screening criteria, and therefore, significant air quality effects are not anticipated.

8.8.4 The operational assessment for air quality effects on human health receptors are Not Significant. Additionally, guidance on Emerging techniques for hydrogen production with carbon capture has been released (Environment Agency, 2023). This will form the basis for discussions with the Environment Agency to agree appropriate BAT and AELs. This will be done as the environmental permit required for the operation of the Proposed Development is developed. The permit application is being prepared generally in parallel with this DCO submission, and will be submitted following the submission of the DCO application in 2024. This will manage air quality emissions from the Proposed Development.

8.8.5 Air quality effects during Proposed Development operation on nearby ecological receptors have also been modelled. The operational assessment for air quality effects on designated ecological receptors are Not Significant.

Decommissioning

8.8.6 It is assumed that relevant good practice mitigation measures will be in place during Proposed Development decommissioning works via the DEMP. With the implementation of such mitigation measures, the predicted air quality effects during decommissioning are considered to be comparable to, or less than, those assessed associated with construction activities, and thus Not Significant.

8.9 Summary of Residual Effects

8.9.1 Summaries of the residual effects associated with the construction, operation and decommissioning of the Proposed Development are presented in Table 8-10 to Table 8-12 respectively.

Table 8-10: Summary of Residual Effects During Construction

RECEPTOR/ RECOURCE	IMPORTANCE AND VALUE/ SENSITIVITY	MAGNITUDE OF IMPACTS	LIKELY SIGNIFICANT EFFECTS	PROPOSED MITIGATION / ENHANCEMENT	RESIDUAL EFFECTS
Human Health	High	Negligible	Adverse Effect on Air Quality from Construction Phase Dust	Not required	Not Significant
Ecological Receptor	High	Negligible	Adverse Effect on Air Quality from Construction Phase Dust	Not required	Not Significant
Human Health	High	Negligible	Adverse Effect on Air Quality from Construction Phase Traffic	Not required	Not Significant
Ecological Receptor	High	Negligible	Adverse Effect on Air Quality from Construction Phase Traffic	Not required	Not Significant

Table 8-11: Summary of Residual Effects During Operation

RECEPTOR/ RECOURCE	IMPORTANCE AND VALUE/ SENSITIVITY	MAGNITUDE OF IMPACTS	LIKELY SIGNIFICANT EFFECTS	PROPOSED MITIGATION / ENHANCEMENT	RESIDUAL EFFECTS
Human Health	High	Negligible	Adverse Effect on Air Quality from Operational Phase	Not Required	Not Significant
Ecological Receptor	High	Negligible	Adverse Effect on Air Quality from Operational Phase	Not Required	Not Significant

Table 8-12: Summary of Residual Effects During Decommissioning

RECEPTOR/ RECOURCE	IMPORTANCE AND VALUE/ SENSITIVITY	MAGNITUDE OF IMPACTS	LIKELY SIGNIFICANT EFFECTS	PROPOSED MITIGATION / ENHANCEMENT	RESIDUAL EFFECTS
Human Health	High	Negligible	Adverse Effect on Air Quality from Decommissioning Phase Dust	Not Required	Not Significant
Ecological Receptor	High	Negligible	Adverse Effect on Air Quality from Decommissioning Phase Dust	Not Required	Not Significant
Human Health	High	Negligible	Adverse Effect on Air Quality from Decommissioning Phase Traffic	Not Required	Not Significant
Ecological Receptor	High	Negligible	Adverse Effect on Air Quality from Decommissioning Phase Traffic	Not Required	Not Significant

8.10 References

- Centre for Ecology and Hydrology and APIS (2016). *Air Pollution Information System- Critical Load Function Tool.*
- Centre for Ecology and Hydrology and APIS (2017). *Air Pollution Information System.*
- Council for European Communities (2008). *Ambient air quality and cleaner air for Europe Directive, 2008/50/EC.*
- Ministry of Housing, Communities and Local Government (2023). *National Planning Policy Framework (NPPF).*
- Department for Communities and Local Government (2021). *Planning Practice Guidance (PPG).*
- Department for Environment, Food & Rural Affairs (Defra) and Environment Agency (2019). *Clean Air Strategy 2019.*
- Department for Environment, Food & Rural Affairs (Defra) and Environment Agency (2016, as updated in 2023). *Environment Agency Risk Assessments For Your Environmental Permit Methodology.*
- Department for Environment, Food & Rural Affairs (Defra). (n.d). *Magic Map Application.*
- Department for Energy Security and Net Zero (2023a). *Overarching National Policy Statement for Energy (EN-1). Draft, March 2023.*
- Department for Energy Security and Net Zero (2023b). *National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4).*
- Department for Energy Security and Net Zero (2023c). *National Policy Statement for Electricity Networks Infrastructure (EN-5).*
- European Union (2010). *Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (IED) (integrated pollution prevention and control) (2010). OJ L 334.*
- European Union (2009). *Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the Conservation of Wild Birds.*
- European Union (1992). *Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora.*
- Environment Agency (2023). *Guidance Emerging techniques for hydrogen production with carbon capture, published 3 February 2023.*
- Defra and Environment Agency (2016, as updated in 2023). *Air emissions risk assessment for your environmental permit.*

- Environmental Protection UK (EPUK)/ Institute of Air Quality Management (IAQM) (2017). *Land-use Planning & Development Control: Planning for Air Quality.*
- European Commission (2009). *The Birds Directive, Directive 2009/147/EC.*
- European Commission (1993). *The Habitats Directive, Council Directive 92/43/EEC.*
- HM Government (1995). *The Environment Act.*
- HM Government (2016). *Environmental Permitting (England and Wales) Regulations 2016.*
- HM Government (2017). *The Conservation of Habitats and Species Regulations 2017.*
- HM Government (2021). *Environment Bill 2019-21.*
- Hartlepool Borough Council (HBC) (2018). *Hartlepool Local Planning Framework- Hartlepool Local Plan May 2018.*
- Highways England (HE) (2019). *Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal- LA 105 Air Quality.*
- Institute of Air Quality Management (IAQM) (2024). *Guidance on the assessment of dust from demolition and construction Version 2.2.*
- Ministry of Housing, Communities and Local Government (2023). *National Policy Planning Policy Framework.*
- International Union for Conservation of Nature (1971). *Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat.*
- Redcar and Cleveland Borough Council (RCBC) (2018). *Redcar and Cleveland Local Adopted May 2018.*
- Stockton-on-Tees Borough Council (STBC) (2019). *Stockton-on-Tees Borough Council Local Plan Adopted 30 January 2019.*
- The Planning Inspectorate (2023). *Scoping Opinion: Proposed H2Teeside Project Case Reference: EN070009, dated 17 May 2023.*
- The Planning Inspectorate (2018). *Advice Note Nine: Rochdale Envelope, Republished July 2018 (version 3).*
- The Planning Inspectorate (The Inspectorate) (2019a). Advice Note Seventeen: Cumulative Effects Assessment.
- The Stationery Office Limited (2010). *Air Quality Standards Regulations 2010.*
- The Stationery Office Limited (2016). *Air Quality Standards Regulations 2016.*
- The Stationery Office Limited (2017). *The Conservation of Habitats and Species Regulations 2017.*

- The Stationery Office Limited (2018). *European Union (Withdrawal) Act 2018 (c. 16).*
- The Stationery Office Limited (2022). *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023.*
- Natural England (2018). *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001).*