South East Strategic Reservoir Option

Preliminary Environmental Information Report

Chapter 13 - Air quality

Date: October 2025

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13 Air quality

13.1 Introduction

13.1.1 This chapter of the Preliminary Environmental Information (PEI) Report provides the preliminary assessment of likely significant effects on air quality from the construction and operation of the proposed SESRO Project (the Project, as detailed in Chapter 2: Project description).

13.1.2 Within this chapter, aspect-specific sections are included on:

- Legislation, policy and guidance (Section 13.2)
- Consultation, engagement and scoping (Section 13.3)
- Assessment methodology (Section 13.4)
- Study area (Section 13.5)
- Baseline conditions (Section 13.6)
- Project parameters, assumptions and limitations (Section 13.7)
- Embedded design mitigation and standard good practice (13.8)
- Preliminary assessment of likely significant effects (Section 13.9)
- Next steps (Section 13.10)

13.1.3 The chapter evaluates the potential impacts of emissions during construction phase, including dust generation from demolition and construction activities, vehicle movements, use of construction plant and machinery, and odour; as well as from the operational phase, including vehicle movements, operational plant and machinery.

13.1.4 Potential air quality impacts are assessed with respect to human receptors such as local residents, schools, hospitals, care homes and areas where the public or businesses could be affected by dust or pollution, as well as ecological receptors including designated ecological sites.

13.1.5 This chapter should be read in conjunction with Chapter 2: Project description and other chapters of key relevance, namely:

- Chapter 7: Terrestrial ecology which provides baseline information for, and considers likely significant effects upon, terrestrial ecology in respect of a range of receptors including designated nature conservation sites, and notable and protected species and habitats.
- Chapter 12: Traffic and transport which considers likely significant traffic and transport effects on people arising from the Project.
- Chapter 16: Human health which considers likely significant effects on health determinants that focus on healthy lifestyles, safe and cohesive communities and socio-economic and environmental conditions, including air quality.

13.1.6 This chapter is supported by the following figures and appendices:

- Figure 13.1: Affected road network and sensitive human receptors included in the assessment
- Figure 13.2: Air quality monitoring locations and Air Quality Management Areas (AQMAs)

- Figure 13.3: Construction dust buffers and ecological receptors
- Figure 13.4: Operational odour sources and pathway receptors
- Appendix 13.1: Air quality assessment methodology
- Appendix 13.2: Air quality baseline data
- Appendix 13.3: Air quality assessment results
- Appendix 13.4: Preliminary assessment of effects for air quality

13.1.7 This PEI Report does not constitute a draft Environmental Statement (ES). Assessments reported within this PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is being developed. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 13.10: Next steps.

13.1.8 Where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed and the design and mitigation are further developed. The ES will be submitted with the Development Consent Order (DCO) application and will provide the final assessment of likely significant effects; this will be informed by the ongoing Environmental Impact Assessment (EIA) process and ongoing consultation and engagement.

13.2 Legislation, policy and guidance

13.2.1 Table 13.1 lists the legislation, policy and guidance relevant to air quality for the Project and specifies where in the PEI Report information is provided in relation to these. A full policy compliance assessment will be presented within the Planning Statement as part of the DCO application.

13.2.2 National Policy Statements (NPS) form the principal policy for developments progressing through the Planning Act 2008. The NPS for Water Resource Infrastructure (NPSWRI) is the primary NPS for the Project. In addition, the Secretary of State must also have regard to any other matters which they think are both important and relevant to the decision and this could include regional and local planning policies.

13.2.3 The Project is located mainly within the Vale of White Horse District, with the exception of the far eastern extent on the eastern bank of the River Thames, which falls within the South Oxfordshire District. The Project is wholly within the county of Oxfordshire. The regional and local planning policies most relevant to the assessment within this chapter are included in Table 13.1.

Table 13.1 Relevant legislation, policy and guidance for air quality

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Legislation		
Air Quality Standards Regulations 2010 (amended 2016) Defines limit values, and timescales within which they are to be achieved, for the purpose of protecting human health and the environment by avoiding, reducing, or preventing harmful concentrations of air pollutants.	The Air Quality Standards Regulations 2010 set legally binding national limit values and objectives for the air pollutants of interest (referred to as 'standards'). These are nitrogen dioxide (NO_2), particular matter (PM_{10}, $PM_{2.5}$) and ammonia (NH_3). The legally binding national limit values and objectives for the air pollutants of interests (standards), have been considered in this assessment to evaluate compliance and assess the potential significance of the air quality effects on the environment.	The national limit standards have been considered in this assessment as outlined in Table 13.2 and the assessment reported in Section 13.9: Preliminary assessment of likely significant effects.
Environmental Protection Act 1990 Provides definitions and procedures for addressing statutory nuisance related to dust, steam, smell or other effluvia arising on industrial, trade or business premises, aiming to control pollution and manage waste. It establishes statutory duties and enforcement mechanisms.	The Project has the potential to result in statutory nuisance as defined by the Act, including emissions to air, dust and odour during construction or operation.	Emissions to air, dust and odour have been assessed in Section 13.9: Preliminary assessment of likely significant effects.
Environmental Targets (Fine Particulate Matter) (England) 2023 Introduced two new targets for $PM_{2.5}$ concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean $PM_{2.5}$ concentration of 10 (micrograms per metre cubed) $\mu g/m^3$ by the end of 2040. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. These regulations set the framework and objective for local authorities to work toward reducing $PM_{2.5}$ emissions from new development during planning decisions.	The Project has the potential to generate $PM_{2.5}$ emissions. The targets introduced for $PM_{2.5}$ concentrations in future years have been considered in this assessment to evaluate compliance and assess the potential significance of the air quality effects on the environment. The Project would be expected to operate beyond 2040. The target level for the annual	The target level for the annual mean $PM_{2.5}$ concentrations has been considered in the assessment in Section 13.9: Preliminary assessment of likely significant effects, as outlined in Table 13.2.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
	mean $PM_{2.5}$ concentrations of 10µg/m^3 has been considered in the assessment.	
Environmental Act 2021 Establishes a new framework for environmental governance and protection following Brexit. Aims to improve air and water quality, protect wildlife, increase recycling and reduce plastic waste. Part IV requires that every local authority shall periodically carry out a review of air quality within its area, including predictions of likely future air quality.	Two Air Quality Management Areas (AQMA) are located within the study area, requiring an assessment of potential effects from the Project and the identification, where necessary, of appropriate mitigation measures to ensure compliance with national air quality standards and local air quality management objectives. Potential traffic effects have been reviewed with forecast traffic data.	AQMAs have been identified in Section 13.6 and are shown on Figure 13.2: Air quality monitoring locations and Air Quality Management Areas (AQMAs). The assessment findings are presented in Section 13.9: Preliminary assessment of likely significant effects. Embedded design mitigation and standard good practice mitigation measures are outlined in Section 13.8: Embedded design mitigation and standard good practice.
Non-Road Mobile Machinery (NRMM) (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 (SI 2018/764) Requires that NRMM engines meet certain emissions standards for different engine types. It also aims to reduce emissions from NRMM through the fitting of devices to engines, to help meet the Stage IV emissions standard, where applicable.	The use of plant and machinery during the construction phase of the Project is required. Equipment use has the potential to impact dust and emissions of NO_x, PM_{10} and $PM_{2.5}$. Construction dust and emissions associated with the use of plant and machinery and their locations relative to sensitive receptors have been considered in the assessment.	Air quality effects from the use of NRMM are assessed in Section 13.9: Preliminary assessment of likely significant effects.
National Policy Statement for Water Resources Infrastructure (NPSWRI)		

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Paragraphs 4.2.3 to 4.2.6 - These paragraphs detail the air quality assessment requirements and how air quality effects should be addressed in the assessment.	The Project is classed as water resource infrastructure. The NPSWRI establishes the policy framework for assessing air quality effects from construction and operation for planning purposes and provides guidance on the inputs required for the Air quality assessment.	An assessment of potential air quality effects from construction and operational phases has been undertaken in Section 13.9: Preliminary assessment of likely significant effects in accordance with the requirements of the NPSWRI.
Paragraphs 4.2.7 to 4.2.9 – These paragraphs explain how and when appropriate mitigation should be applied in order to meet statutory air quality limits and objectives.	The NPSWRI establishes the policy framework for mitigating air quality effects from construction and operation for planning purposes and provides recommendations for key mitigation considerations.	Standard good practice and embedded design mitigation measures have been applied and are detailed in Sections 13.8. These are considered as part of the assessment presented in Section 13.9: Preliminary assessment of likely significant effects.
Paragraphs 4.2.10 to 4.2.14 – These paragraphs set out decision-making making criteria for the Secretary of State (SoS) and the circumstances when the SoS would refuse consent.	All information relevant to the assessment of air quality effects will be provided to the SoS in the ES to inform their decision making process.	Standard good practice and embedded design mitigations have been applied and are detailed in Sections 13.8 and assessment is presented in Section 13.9: Preliminary assessment of likely significant effects.
Other national policy		
National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2024). Paragraphs 110, 187 and 199. The NPPF sets out government's planning policies for England and how these are expected to be applied. It outlines the requirement to assess air quality effects to	The assessment of potential air quality effects from the construction and operational phases has been undertaken and the air quality standards have been considered. The outcome of the assessment	The assessment is reported in Section 13.9: Preliminary assessment of likely significant effects. Early design inputs, standard good practice and

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
ensure compliance with national air quality standards and incorporate mitigation measures into decision-making.	has used to develop appropriate mitigation measures for the Project.	embedded design mitigation measures following relevant guidance and professional experience have been proposed for the Project, as set out in Section 13.8: Embedded design mitigation and standard good practice.
Environmental Improvement Plan (Defra, 2023) This plan aims to address air, water, and land pollution, setting new targets to improve the environment and people's health and quality of life. The document represents the first review of the 25 Year Environment Plan.	The Project has the potential to generate $PM_{2.5}$ emissions. This assessment has adopted the annual mean $PM_{2.5}$ target of 10µg/m^3.	The air quality standards used for the assessment are presented in Table 13.2.
Clean Air Strategy (Defra, 2019) This strategy sets out actions for reducing emissions from various sources, such as transport, domestic activities, farming and industry. It also aims to reduce population exposure to $PM_{2.5}$ levels through achieving the annual mean target of 10 µg/m^3.	The assessment has considered the legally binding national limit values and objectives for the pollutants of interest and supports the development of appropriate mitigation measures through the planning system.	The legally binding national air quality standards for the air pollutants assessed are outlined in Table 13.2. Mitigation measures to avoid or reduce the potential air quality effects have been proposed in Section 13.8: Embedded design mitigation and standard good practice.
Regional and local policy		
Vale of White Horse Local Plan 2031 Part 1 (Vale of White Horse District Council, 2016) and Part 2 (Vale of White House District Council, 2019). Sets out the spatial strategy and strategic policies for the district to deliver sustainable development. Relevant air quality policies and objectives include SO12 (minimise	The policies require demonstration that effects on air quality would be managed during construction and operation. Early design inputs, standard good practice and embedded design mitigation measures	AQMAs and sensitive receptors have been identified in Sections 13.5 and 13.6. An impact assessment considering construction and operation of the

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
greenhouse gas and other pollution), CP34 (A34 Strategy), CP43 (Natural Resources) and Development Policy 26 (Air Quality).	following relevant guidance and professional experience are required to avoid or reduce the potential air quality effects. Where feasible, the assessment will accommodate the policy aspirations under air quality.	Project is presented in Section 13.9: Preliminary assessment of likely significant effects. Standard good practice and embedded design mitigation measures are recorded in Section 13.8: Embedded design mitigation and standard good practice.
Draft Joint Local Plan 2041 (Vale of White Horse District Council/South Oxfordshire District Council, 2024). Contains developing planning policies that help address the climate emergency, restore nature, and meet the needs of residents. Relevant policy includes CE9 Air Quality.	This policy aims to help protect and enhance air quality in both district councils. Early design inputs, standard good practice and embedded design mitigation measures following relevant guidance and professional experience are required to avoid or reduce the potential air quality effects. Where feasible, the assessment will accommodate the policy aspirations under air quality.	AQMAs and sensitive receptors have been identified in Sections 13.5 and 13.6. An impact assessment considering construction and operation of the Project is presented in Section 13.9: Preliminary assessment of likely significant effects. Standard good practice and embedded design mitigation measures are recorded in Section 13.8: Embedded design mitigation and standard good practice.
South Oxfordshire Local Plan 2035 (South Oxfordshire District Council, 2020). Sets out the future for development in South Oxfordshire up to 2035. Relevant policy includes EP1: Air Quality for protecting public health.	The policies require demonstration that effects on air quality would be managed during construction and operation. Where feasible, the assessment will accommodate the policy	AQMAs and sensitive receptors have been identified in Sections 13.5 and 13.6. An impact assessment considering construction and operation of the

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
	aspirations under air quality. Early design inputs, standard good practice and embedded design mitigation measures following relevant guidance and professional experience are required to avoid or reduce the potential air quality effects.	Project is presented in Section 13.9: Preliminary assessment of likely significant effects. Standard good practice and embedded design mitigation measures are recorded in Section 13.8: Embedded design mitigation and standard good practice.
East Hanney Neighbourhood Plan (2021-2031 (East Hanney Neighbourhood Plan (EHNP) Steering Committee, 2023) Sets out specific planning policies for East Hanney. The plan includes relevant policy EHNP: Sustainable development and Environmental Impact	The policies require demonstration that effects on air quality would be mitigated, particularly in relation to air quality, traffic emissions, and sustainable development practices. Early design inputs, standard good practice and embedded design mitigation measures following relevant guidance and professional experience are required to avoid or reduce the potential air quality effects. Where feasible, the assessment will accommodate the policy aspirations under air quality.	AQMAs and sensitive receptors have been identified in Sections 13.5 and 13.6. An impact assessment considering construction and operation of the Project is presented in Section 13.9: Preliminary assessment of likely significant effects. Standard good practice and embedded design mitigation measures are recorded in Section 13.8: Embedded design mitigation and standard good practice.
Guidance		
Planning Practice Guidance (PPG) on Air Quality (Department for Levelling Up, Housing and Communities, 2019) Outlines how new developments should be assessed for their impact on air quality and how to incorporate mitigation measures to prevent adverse impacts on public health	The guidance explains how air quality should be considered in order to comply with the NPPF and states when air quality is considered relevant to a planning application.	The methodology for assessing effects and determining their significance is detailed in Section 13.4. An assessment of potential air quality

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
and the environment. The PPG outlines how air quality should be considered in order to comply with the NPPF and states when air quality is considered relevant to a planning application. This includes factors such as changes in traffic volumes, vehicle speeds, congestion or traffic composition, the introduction of new point sources of air pollution, exposure of people to existing sources of air pollutants, and the potential to give rise to air quality impacts at nearby sensitive receptors. It also informs the basis for assessing impacts and determining the significance of impact, as well as the appropriate mitigations to ensure unacceptable risks from new development are prevented.	Further, it outlines the requirement to assess air quality effects to ensure compliance with national air quality standards and incorporate mitigation measures into decision-making, and it informs the technical scope and methodology of the assessment.	effects from the construction and operational phases is provided in Section 13.9: Preliminary assessment of likely significant effects. Mitigation measures to reduce potential air quality impacts are proposed in Section 13.8: Embedded design mitigation and standard good practice.
Institute of Air Quality Management (IAQM) guidance on the assessment of dust from demolition and construction (IAQM, 2024) This guidance outlines the methodology for development consultants and environmental health officers on how to assess air quality impacts from demolition and construction activities.	Dust effects and emissions from equipment are anticipated from the demolition and construction activities associated with the Project, including site preparation, excavation, construction machinery, and the movements of heavy vehicles on local road network. The methodology outlined in the guidance for evaluating construction dust effects and the mitigation measures to reduce the on-site and off-site emissions are applicable to the Project.	The methodology for assessing dust effects is provided in Section 13.4. The potential significance of effects is discussed in Section 13.9: Preliminary assessment of likely significant effects and corresponding mitigation measures are proposed in Section 13.8: Embedded design mitigation and standard good practice.
Environmental Protection UK (EPUK) & IAQM guidance on land-use planning and development control: Planning for air quality (EPUK and IAQM, 2017) This guidance provides a framework for professionals operating within the planning system to provide a means of reaching sound decisions, with regards to the air quality implications of development proposals. The document provides	As construction and operational traffic effects are anticipated, the screening criteria, assessment methodology, and the framework for determining the significance of potential effects for planning	Construction and operational traffic impact assessments have been undertaken in accordance with the guidance, and the potential significance effects are discussed in Section 13.9: Preliminary

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
guidance on when air quality assessments are required by providing screening criteria regarding the size of a development, changes to traffic flows/composition, energy facilities or combustion processes associated with the development.	purposes are directly applicable to the Project.	assessment of likely significant effects.
IAQM guidance on the assessment of odour for planning (IAQM, 2018) The guidance provides a framework for assessing and managing odour impacts from various sources, such as industrial, commercial, or development projects. It outlines best practices and methodologies for the assessment, measurement, and mitigation of odour emissions in line with air quality management and planning requirement.	Odour emissions have the potential to arise from the construction and operational activities. The methodology outlined in the guidance for evaluating odour emissions and the mitigation measures are therefore applicable to the Project.	The methodology for assessing odour effects is provided in Section 13.4. Potential odour emissions are discussed in Section 13.9: Preliminary assessment of likely significant effects, with corresponding mitigation measures proposed in Section 13.8: Embedded design mitigation and standard good practice to address these effects, where required.
Integrating the Environment Act air quality targets into the planning system (Defra, 2023) This guidance outlines how the legally binding air quality targets introduced by the Environment Act 2021 should be considered in planning decisions.	Defra's advice explains that there is no current requirement to consider the new $PM_{2.5}$ targets in planning decisions and that guidance to local planning authorities will be forthcoming before this position changes. In the future, when planning decisions do need to consider the new targets, the expectation is that this will focus on reducing emissions from new development rather than there being a direct requirement for planning-related air quality assessments to predict $PM_{2.5}$ concentrations. Therefore, the target level	Construction and operational traffic impact assessments are in Section 13.9: Preliminary assessment of likely significant effects.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
	for the annual mean $PM_{2.5}$ concentrations of 10µg/m^3 has been considered in the assessment.	
Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulation (Natural England, 2018) This guidance outlines the process for assessing road traffic emissions at European sites under the Conservation of Habitats and Species Regulations.	This guidance provides advice on air quality assessment associated with plans/projects that would likely generate road traffic emissions to air that could affect European sites.	The Natural England's screening criteria has been used to inform the construction and traffic assessment methodology, detailed in Section 13.4.
Guidance on decision-making thresholds for air pollution (Joint Nature Conservation Committee (JNCC), 2021) This guidance provides a framework for determining when air pollution effects from individual development on designated nature conservation sites can be considered insignificant.	This guidance provides criteria to be considered when making a decision where a proposal gives rise to potential air quality on designated nature conservation sites.	This guidance was used as part of the methodology discussion with the Project Ecologist, detailed in Section 13.2.5.
Advisory Note: Ecological Assessment of Air Quality Impacts (Chartered Institute of Ecology and Environmental Management (CIEEM), 2023) This note is designed to guide ecologists and air quality specialists in making informed judgements about the ecological effects of changes in pollution concentrations and deposition rates.	This note is to assist ecologists (and air quality specialists) with matters that they should consider in order to make an informed judgement as to the ecological effects of changes in pollution concentrations and deposition rates.	This guidance was used as part of the methodology discussion with the Project Ecologist, detailed in Section 13.3.
Local Air Quality Management (LAQM) Technical guidance (TG22) (Defra, 2022) This guidance is designed to support local authorities in carrying out their duties to review and assess air quality in their area. It provides detailed guidance on how to assess the impact of measures using existing air quality tools.	This guidance and associated tools provide best practice guidance for air quality assessment in the UK.	AQMAs have been identified in Section 13.6 and Figure 13.2: Air quality monitoring locations and Air Quality Management Areas (AQMAs). An assessment of potential air quality effects from the construction and operational phases has been undertaken as reported in Section 13.9: Preliminary

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
		assessment of likely significant effects of this chapter.
Vale of White Horse District Council Air Quality Developer's Guidance (Vale of White Horse District Council, 2021) This guidance assists developers within the district by outlining when and how to assess air quality impacts. It reinforces the considerations of the national air quality standards as set out in the NPPF and PPG, details the requirements for air quality assessments, identifies relevant pollutants and emission sources, and provides best practice for mitigating air quality impacts through planning.	An air quality assessment is required to accompany the DCO application. The Vale of White Horse air quality guidance has been considered and this assessment is generally aligned with Vale of White Horse District Council requirements.	The methodology for assessing effects and determining their significance is detailed in Section 13.4. An assessment of potential air quality effects from the construction and operational phases has been undertaken as reported in Section 13.9: Preliminary assessment of likely significant effects.

13.2.4 The legally binding national air quality standards for the air pollutants assessed are outlined in Table 13.2 below.

Table 13.2 Air quality standards

Pollutant	Averaging period	Air quality standard
Human health		
Nitrogen Dioxide (NO_2)	Annual mean	40µg/m^3
	1-hour mean	200µg/m^3 Not to be exceeded more than 18 times a year (99.8th percentile)
Particulate Matter (PM_{10})	Annual mean	40µg/m^3
	24-hour mean	50µg/m^3 Not to be exceeded more than 35 times a year (90.4th percentile)
Fine Particulate Matter ($PM_{2.5}$)	Annual mean	20µg/m^3
		12µg/m^{3*}
		10µg/m^3
Natural environment		
Oxides of nitrogen (NO_x)	Annual mean	30µg/m^3
Ammonia (NH_3)	Annual mean	3µg/m^3 (1µg/m^3 where lichens or bryophytes are present)

13.2.5 In relation to Table 13.2 above, it should be noted that the Environmental Targets (Fine Particular Matter) (England) Regulations 2023 were updated in 2023, to state that 'the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10µg/m³ ('the target level')' by 31 December 2040. The Environmental Improvement Plan (2023) sets an interim target of 12 µg/m³, to be achieved by 31 January 2028.

13.3 Consultation, engagement and scoping

13.3.1 Feedback from consultation and engagement is used to define the assessment approach and to ensure that appropriate baseline information is used. Feedback is also used to drive the design of the Project to avoid, prevent and reduce any likely environmental effects. In particular, feedback from key stakeholders has informed the Project's mitigation measures. Specific mitigation measures relevant to the Air quality assessment are summarised in Section 13.8: Embedded design mitigation and standard good practice. Engagement is ongoing and will continue to inform the EIA and design process.

Scoping opinion

13.3.2 The EIA Scoping Report (Thames Water, 2024) was issued to the Planning Inspectorate (PINS) on 28 August 2024. PINS provided their EIA Scoping Opinion (The Planning Inspectorate, 2024) on 8 October 2024, which included feedback from consultation bodies that it formally consulted.

13.3.3 Table 13.3 captures the key Scoping Opinion comments received from PINS and other key comments received from consultation bodies relevant to the Air quality assessment, along with the Applicant's response to these at this stage of the assessment. Key activities to inform the final assessment that will be undertaken between the PEI Report and ES are covered in Section 13.10: Next Steps. The full consultee comments on the EIA Scoping Report and responses to these will be provided in the ES.

Table 13.3 Key Scoping feedback for air quality

Stakeholder	Scoping comment	Applicant response
PINS	3.8.1 - The Scoping Report proposes to scope out this matter [emissions from site plant and machinery – construction] on the basis that plant and items of machinery would likely be used for only a limited duration in any one location and spread across the Proposed Development, and due to the absence of sensitive receptors in the vicinity of the proposed works as such significant effects on air quality are considered unlikely. Details of the plant proposed and the location of construction activities, or the location of sensitive receptors are not provided within the Scoping Report. On this basis, the Inspectorate does not agree that this matter can be scoped out at this stage. An	The plant and machinery used during construction phase and their locations relative to sensitive receptors have been considered as part of the PEI Report. A summary of plant required to facilitate construction is provided in Chapter 2: Project description. The initial assessment of likely significant effects is presented in Section 13.9. The area considered for the PEI Report NRMM impacts is different compared with the area defined in the scoping report. The justification is provided in paragraph 13.4.5 of this PEI Report.

Stakeholder	Scoping comment	Applicant response
	assessment of effects should be included unless robust evidence is provided to demonstrate that such machinery would not give rise to significant air quality effects.	The same approach will be used to inform the ES.
PINS	3.8.3 - The Scoping Report proposes to scope out this matter [emissions from construction-related off-site traffic] on the basis that predicted construction-related traffic flows associated with construction are likely to be less than the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) screening criteria. Therefore, the likely effects on air quality are considered not significant. Paragraph 13.6.11 of the Scoping Report states that anticipated construction-related traffic flow data are yet to be finalised at this stage. Details of the location of sensitive receivers are not provided within the Scoping Report, however paragraph 1.5.28 states that an Air Quality Management Area is located directly north of the site. On this basis, the Inspectorate does not agree that this matter can be scoped out at this stage. An assessment of effects should be included unless robust justification is provided to demonstrate that the emissions from construction traffic would not give rise to significant air quality effects.	Construction traffic volumes have been reviewed and compared against the thresholds detailed in the EPUK/IAQM planning guidance to determine the assessment requirements. A construction traffic impact assessment on air quality has been incorporated and discussed in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
PINS	3.8.4 - The Scoping Report proposes to scope out this matter [odour impacts – construction] on the basis that no significant sources of odour associated with the construction phase are identified. In the absence of information to demonstrate that earthworks activities would not be undertaken in contaminated areas which may contain odorous materials, the Inspectorate does not agree that this matter can be scoped out at this stage. The ES should provide an assessment of this matter, or the information required to demonstrate the absence of a likely significant effect.	Potential odour effects from construction activities associated with the Project have been reviewed in accordance with the IAQM guidance and are proposed to remain scoped out. Ground conditions or material which is likely to result in odorous emissions to air has not been identified and all material is expected to be inert with a low risk of unpleasant odour (see Chapter 10: Geology and soils). Therefore, odour impacts would be negligible, and effects would not be significant. Given the absence of odour-generating sources and the low risk of unpleasant odour associated with the construction

Stakeholder	Scoping comment	Applicant response
		activities, odour effects during construction remain scoped out at this stage. The reasons for scoping out will be documented in the ES and take into account any design changes or updates following the PEI Report. If any potential for encountering odorous material is identified, appropriate mitigation (e.g. good practice controls and odour management measures) will be set out to ensure that any risk is effectively managed and does not lead to significant effects. The odourous sources during construction will be reviewed again in the ES stage, with the support of the data provided in the Geology and soils ES chapter.
PINS	3.8.5 - The Scoping Report proposes to scope out this matter [emissions from off-site traffic – operation] on the basis that predicted operational traffic flows associated with construction are likely to be less than the EPUK and IAQM screening criteria. Likely effects on air quality are therefore considered insignificant. Paragraph 13.6.16 of the Scoping Report states that anticipated operational related traffic flow data are yet to be finalised at this stage. Details of the location of sensitive receivers are not provided within the Scoping Report. On this basis, the Inspectorate does not agree that this matter can be scoped out at this stage. An assessment of effects should be included unless robust justification is provided to demonstrate that the emissions from operational traffic would not give rise to significant air quality effects.	Operational traffic forecasts (presented in Appendix 13.1: Air quality assessment methodology) have been reviewed and compared against the thresholds detailed in the EPUK/ IAQM planning guidance to determine the assessment requirements. A preliminary operational traffic impact assessment on air quality has been incorporated and is reported in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
PINS	3.8.8 - The Scoping Report proposes to scope out odour impacts during operation as no significant sources of odour will occur. Details of the treatment process to be employed at the Water Treatment Works (WTW) are not provided within the Scoping Report. On this basis, the Inspectorate does not agree that this	Operational odour effects associated with the Project have been reviewed in accordance with the IAQM guidance and are reported in Section 13.9: Preliminary assessment of likely significant effects.

Stakeholder	Scoping comment	Applicant response
	matter can be scoped out at this stage. An assessment of effects should be included unless robust justification is provided to demonstrate that the operation of the WTW would not produce any odour. In the absence of further details, the Inspectorate does not agree to scope out operational odour impacts at this stage.	The same approach will be used to inform the ES.
PINS	3.8.9 - Paragraph 13.4.5 of the Scoping Report states that the study area for the assessment of potential air quality effects from road traffic would include receptors with 200 metres (m) of the 'affected' roads [, which are those roads where] the change in traffic flows exceed the relevant thresholds set out in the EPUK/IAQM Land-Use Planning & Development Control: Planning for Air Quality guidance. The ES should also consider the potential impacts from changes to air quality in relation to potential increases in pollutants from traffic emissions on ecological receptors. The study area for emissions from road traffic should also include where construction or operation activities would lead to a change in traffic flows on the road network, that exceed the relevant thresholds set out in Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001).	Potential effects on ecological receptors from changes in air quality have been considered with the use of relevant guidance in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
PINS	3.12.20 - The Applicant proposes to scope out this matter [Environmental conditions: air quality during the operational phase] based on the reasoning provided in the Air Quality section. The Inspectorate does not agree to scope this matter out on the basis that not enough information has been provided in relation to operational traffic movements and routing. Please see box 3.8.5 of this Scoping Opinion for further information.	Operational traffic forecasts have been reviewed and compared against the thresholds detailed in the EPUK/ IAQM planning guidance to determine the assessment requirements. A preliminary operational traffic impact assessment on air quality has been incorporated and is reported in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
Oxfordshire County Council	We consider that potential impacts from changes to air quality on ecological receptors should be assessed in terms not	Potential effects on ecological receptors from changes in air quality due to traffic emissions have been

Stakeholder	Scoping comment	Applicant response
	only of dust deposition, but also in relation to potential increases in pollutants from traffic emissions. The study area for emissions from road traffic (Chapter 13 Air Quality) should be reviewed and expanded where necessary to include where construction or operation activities would lead to a change in traffic flows on the road network, that exceed the relevant thresholds set out in Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001): The change in light duty vehicles (LDV) flows of more than 1,000 annual average daily traffic (AADT) within 200m of a designated site; The change in heavy duty vehicles (HDV) flows of more than 200 AADT within 200m of a designated site.	considered and reported in this chapter of the PEI Report (see Section 13.5). Thresholds and screening criteria for this purpose have been derived from the appropriate guidance, including Natural England (2018), JNCC (2021) and CIEEM (2023). The same approach will be used to inform the ES.
Oxfordshire County Council	We note that the effect on air quality from construction plant machinery emissions is considered likely to be 'not significant' and is scoped out of the EIA. The rationale for this is that despite the long-term nature of the construction, anticipated works will not occur simultaneously, and will be carried out over a large geographical area. We welcome that operational impacts of air quality will be kept under review as design progresses and more information on traffic movements becomes available. It is welcomed that public rights of way are considered among the list of sensitive receptors.	The plant and machinery anticipated to be used during the construction phase and their locations relative to sensitive receptors have been considered qualitatively at this stage, as reported in Section 13.5 of this PEI Report. For operational traffic, the forecasts have been reviewed and compared against the thresholds detailed in the EPUK/ IAQM planning guidance to determine the assessment requirements. A preliminary operational traffic impact assessment on air quality has been incorporated and is reported in Section 13.9: Preliminary assessment of likely significant effects. In terms of sensitive receptor selection, worst-case location receptors have been selected for the PEI Report. The same approach will be used to inform the ES.
Abingdon Town Council	Odour emissions to be monitored up to 2 kilometres (km) away from the site during construction. Potential impact above that distance is not considered likely. The site	Potential odour effects from construction activities associated with the Project have been reviewed in accordance with the IAQM

Stakeholder	Scoping comment	Applicant response
	is south-west of Abingdon and our prevailing winds are south westerlies blowing to the north-east so the Council feels Abingdon should be included in the scoping.	guidance as reported in Section 13.9: Preliminary assessment of likely significant effects. The review has included all relevant receptors including Abingdon. The same approach will be used to inform the ES.
Abingdon Town Council	Vehicle emissions during construction using the A415 to join the A34 at Marcham Interchange would be passing allotments owned by the Town Council. These would be well used during the Spring to Autumn prime construction months each year, so the Council feels an assessment for that part of the A415 should be scoped in.	Construction traffic impacts have been scoped in for this assessment. Predicted construction traffic volumes (provided in Appendix 13.1: Air quality assessment methodology) have been reviewed (including the A415) and compared against the thresholds detailed in the EPUK/ IAQM planning guidance to determine the assessment requirements. A construction traffic impact assessment on air quality has been incorporated and is reported in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
Abingdon Town Council	The Council feels construction vehicle emissions should be scoped in as it will not be a small amount of plant required.	Construction traffic volumes have been reviewed and compared against the thresholds detailed in the EPUK/ IAQM planning guidance to determine the assessment requirements. A preliminary construction traffic impact assessment on air quality has been incorporated as reported in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
Abingdon Town Council	The Thames Intake / Outfall construction will generate dust and odours and is very close to major residential areas of South Abingdon so requires a robust assessment as work will be in months people want to be outside.	Potential odour effects from construction activities associated with the Project have been reviewed in accordance with the IAQM guidance as reported in this chapter of the PEI Report. Relevant receptors have been considered in the PEI Report, including the residential areas of South Abingdon. Construction dust emissions have

Stakeholder	Scoping comment	Applicant response
		been assessed as reported in Section 13.9: Preliminary assessment of likely significant effects. The same approach will be used to inform the ES.
Environmental Health Officer of Vale of White Horse District Council	Vale of White Horse is satisfied with the air quality approach outlined in the Scoping Report.	The Air quality assessment methodology used in this PEI Report is in line with the that used in the Scoping Report. The same approach will be used to inform the ES.

Non-statutory public consultation

13.3.4 Non-statutory public consultation on the emerging proposals for the Project was undertaken with stakeholders and local communities in Summer 2024. Formal responses to this non-statutory consultation feedback have been provided within the 'Statement of Response' (Thames Water, 2025). Any feedback relevant to the Air quality assessment has been taken into account where appropriate.

Ongoing engagement

13.3.5 This section summarises the ongoing technical engagement for air quality with key stakeholders since EIA scoping. This includes meetings, written correspondence and a Technical Liaison Group (TLG) attended by the Project stakeholders.

13.3.6 Table 13.4 provides a summary of the ongoing technical engagement for air quality, including the progress, issues raised and outcomes for the assessment.

Table 13.4 Key ongoing engagement for air quality

Stakeholder	Topics	Outcome
Local authorities	General overview of methodology as elements that had been scoped out have been brought back into scope following PINS Scoping Opinion. This includes: Construction dust, construction equipment, traffic (construction and operational) and operational odour.	Initial engagement with Natural England has been undertaken to discuss the assessment methodology. Further engagement to be undertaken with all relevant stakeholders after the submission of the PEI Report to confirm approach in preparation for the ES submission.
	Minor change to construction NRMM assessment approach. Potential impacts on human receptors within 100m of the construction areas and compound locations are considered for this assessment, as this is typically regarded as the affected distance where emissions from NRMM may have a	

Stakeholder	Topics	Outcome
	more localised effect. Beyond 100m, emissions are expected to have minimal air quality impacts. This is smaller than the 500m radius specified within the Scoping Report.	
Natural England	The guidance and methodology used for assessing operational and construction traffic at the nearby ecological sites to be confirmed with Natural England. The agreed approach and results will be used to inform the air quality ES chapter as well as the Project's Habitat Regulations Assessment.	

13.4 Study area

Baseline

13.4.1 The baseline study area was defined by reviewing the monitoring operated by Vale of White House District Council and South Oxfordshire District Council, covering locations which are within 2km of the Project (detailed in Section 13.6). The 2km area reflects industry standard / good practice and is considered appropriate in order to understand the effects from local sources such as roads and industrial processes and to gather a suitably representative baseline from monitoring data. The baseline study area also considered existing industrial processes located within 2km of the Project, identified by using the Environment Agency's (EA) Public Register of Industrial Installations website (EA, 2025). This was used to inform the existing pollution sources in the vicinity of the Project. Where the Affected Road Network (ARN) and roads within 200m of the ARN extends beyond 2km from the Project, the baseline is determined based on existing roadside monitoring data.

13.4.2 The study areas have changed since the EIA Scoping stage as a result of changes to the design and the associated draft Order limits. See Chapter 2: Project description for details of the Project parameters and assumptions for the PEI Report.

Construction dust

13.4.3 For dust and particulate matter resulting from construction activities, the potential effects from demolition and construction of the Project have been assessed using the qualitative approach described in the IAQM dust guidance (IAQM, 2024). The assessment considered sensitive receptors within 250m of the draft Order limits of the Project (for ecological receptors, within 50m) and/or human receptors within 50m of the route(s) used by the construction vehicles on the public highway and up to 250m from the site entrance(s).

13.4.4 There are designated ecological sites identified within 50m of the draft Order limits. Air quality effects on ecological receptors are discussed in Chapter 7: Terrestrial ecology and will be fully addressed within the Air quality chapter of the ES.

Construction site equipment

13.4.5 No specific guidance exists on the definition of a study area from NRMM and generator emissions due to the large variation in potential effects from different types of sources. For the purposes of this assessment, a study area of up to a 100m radius from the construction areas/ compounds listed within Chapter 2: Project description is considered appropriate given the potential size and duration of the operations to be undertaken and the likely size of plant required. Note, this is smaller than the 500m radius specified within the Scoping Report which following review and professional judgement is considered to be disproportionate to the level of risk. This study area also follows precedent set on other recent DCO projects such as Bramford to Twinstead Reinforcement project (National Grid, 2023). Beyond this distance it is considered that the effect of any emissions on local air quality would be very limited due to dispersion and influence of other pollution sources.

Vehicle exhaust emissions

13.4.6 The air quality impact of the Project on traffic and movement would be associated with the anticipated rise in travel activity across the highway network resulting from construction and operation.

13.4.7 Two sets of screening thresholds have been applied to human and ecological receptors to define the study area, which is also known as ARN.

13.4.8 For human receptors, the study area for the construction and operational vehicle exhaust emission assessments were determined using the screening criteria detailed in the EPUK & IAQM land-use guidance (EPUK and IAQM, 2017). The screening criteria are as follows:

- A change of Light Duty Vehicle (LDV) flows of:
  - more than 100 AADT within or adjacent to an AQMA
  - more than 500 AADT elsewhere
- A change of Heavy Goods Vehicle (HGV) flows of:
  - more than 25 AADT within or adjacent to an AQMA
  - more than 100 AADT elsewhere

13.4.9 Meeting either of these criteria indicates that detailed dispersion modelling of the road traffic emissions is necessary. Roads which exceed the criteria, and where sensitive human receptors are located within 200m of roads and junctions along the ARN, have also been included to create the ARN. The screening assessment for construction and operational traffic data are presented in Appendix 13.1 Air quality assessment methodology and the ARN for construction and operational traffic is shown in Figure 13.1: Affected road network and sensitive human receptors included in the assessment.

13.4.10 Sensitive human receptors located within 200m of the construction and operational traffic ARN have been selected and they are presented in Appendix 13.1: Air quality assessment methodology and Figure 13.1: Affected road network and sensitive human receptors included in the assessment. These receptors are closest to each road within the ARN, representing the worst-case exposure locations to vehicle exhaust emissions. Receptors further away would experience lesser effects and are not included in the assessment.

13.4.11 For ecological receptors, the traffic data for construction has been screened using the relevant criteria set out in the Natural England's approach to advising competent

authorities on the assessment of road traffic emissions under the Habitats Regulations (Natural England, 2018). The screening criteria are as follows:

- A change of LDV flows of:
  - more than 1,000 AADT within 200m of a designated site
- A change of HGV flows of
  - more than 200 AADT within 200m of a designated site

13.4.12 The screening assessment of traffic data for the peak construction year 2036 and the opening year 2043 shows none of the traffic data exceeds the above criteria. Therefore, vehicle exhaust emissions assessment on ecological receptors has not been assessed further within this PEI Report and traffic data will be reviewed for the ES.

13.4.13 In support of preparing the PEI Report, the screening thresholds detailed 13.4.11 have been applied with the use of the traffic data received for the PEI Report. Ongoing engagement will be undertaken with Natural England and should there be changes to the assessment methodology, this will be reflected in the ES. Further, finalised traffic data will also be reviewed and compared with the agreed screening thresholds during the ES stage.

Odour

13.4.14 Different sources of odour would affect receptors over different distances due to the varying strength and nature of emissions. Potential sources of odour during the operational phase have been reviewed.

13.4.15 The potential for operational effects were reviewed based on the parameters and assumptions as summarised in Section 13.7. Where required, a Source Pathway Receptor (SPR) assessment has been undertaken in accordance with the IAQM odour guidance (IAQM, 2018).

13.4.16 Worst-case receptors based on the proximities and downwind locations from the potential odour sources have been identified to be included in the SPR assessment.

13.4.17 There are no prescribed distance criteria in relation to odour emissions. Therefore, the following distance ranges, based on distance from the source to receptors have been used to define the effectiveness of the pathway:

- Receptors within 200m of the source
- Receptors between 200m and 500m from the source and
- Receptors between 500m and 1km from the source

13.5 Assessment methodology

13.5.1 This section outlines the methodology followed to assess the likely significant effects of the Project in relation to air quality including:

- Effects scoped in to the assessment
- Criteria for determining likely significant effects
- Assessment of cumulative effects

13.5.2 The project-wide approach to the assessment methodology is set out in Chapter 4: Approach to environmental assessment. This has informed the approach used in this Air quality assessment.

13.5.1 Any further data collection or site surveys, studies, modelling, or additional assessments that are still to be undertaken to inform the ES are set out in Section 13.10: Next steps.

13.5.2 The assessment methodology for air quality has followed best practice guidance for the assessment of air quality effects. Full details of the methodology are presented in the sections below:

- IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2024)
- EPUK & IAQM guidance on land-use planning and development control: Planning for air quality (EPUK and IAQM, 2017)
- IAQM guidance on the assessment of odour for planning (IAQM, 2018)
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulation (Natural England, 2018)
- LAQM Technical guidance (TG22) (Defra, 2022)

Scope of the assessment

13.5.3 The scope of the assessment has been informed by the EIA Scoping process, including the EIA Scoping Report (Thames Water, 2024) and Scoping Opinion (The Planning Inspectorate, 2024), combined with subsequent changes to the Project design and an enhanced understanding of the baseline environment.

13.5.4 Matters that have been scoped out of the Air quality assessment are documented within Appendix 4.1: Matters scoped out of the EIA, along with justification for this scoping approach. In summary, matters scoped out are:

- Effects due to emissions from proposed freight trains transporting bulk material during construction.
- Odour effects from construction activities.
- Effects due to emissions of dust and particulate matter during operation.
- Effects due to emissions of pollutants from NRMM, generator and combustion plant during operation.

13.5.5 Effects that are scoped in for the Air quality assessment relevant to the construction phase are:

- Effects associated with construction related dust, including, dust soiling, human health and ecological effects arising from dust and particulate matter emissions.
- Effects on air quality due to emissions from site plant and machinery, also known as non-road mobile machinery (NRMM).
- Effects on air quality due to emissions from construction-related off-site traffic.

13.5.6 Effects that are scoped in for the Air quality assessment relevant to the operational phase are:

- Effects on air quality due to emissions from operational off-site traffic.
- Odour effects from operational activities.

13.5.7 Air quality effects on ecological receptors are discussed in Chapter 7: Terrestrial ecology and will be fully addressed within the Air quality chapter of the ES.

13.5.8 It is acknowledged that the Planning Inspectorate has requested further information in relation to air quality emissions associated with freight trains. From the information provided in the Project's parameters and assumptions set out in Section 13.7, it is anticipated there would be three trains arriving and three trains departing the Rail Siding and Materials Handling Facility during construction, five days per week for 47 operating weeks per year. Considering the number of train movements would be relatively low, these effects remain scoped out of the Air quality assessment (see also Appendix 4.1: Matters scoped out of the EIA).

Methodology

13.5.9 This section sets out the methodology used for establishing the baseline and future baseline and assessing the effects on air quality for those aspects scoped into the assessment.

13.5.10 The methodology for assessing effects is generally based on the principle that the environmental effects of the Project, in relation to a receptor, should be determined by identifying the receptor's sensitivity, assessing the magnitude of impact the Project would have on the receptor and then using professional judgement in combining these two elements to identify the significance of effect.

13.5.11 In assessing the effects resulting from the Project, the methodology has been set out to address potential effects from the construction and operational phases.

13.5.12 For the construction, the air quality effects to be assessed are related to:

- Construction dust
- Construction site equipment
- Vehicle exhaust emissions

13.5.13 The methodology for assessing construction dust follows the IAQM dust guidance (IAQM, 2024) and the approach is summarised in the sections below and full details of the construction dust assessment methodology are presented in Appendix 13.1: Air quality assessment methodology. For construction site equipment and vehicle exhaust emissions, their effects have been assessed in accordance with the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017).

13.5.14 For operation, the air quality effects are related to:

- Vehicle exhaust emissions
- Odour

13.5.15 Similarly to construction vehicle exhaust emissions, the operational vehicle exhaust emissions have been assessed using the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017). For odour assessment, it follows the IAQM odour guidance (IAQM, 2018) and the summary is provided in the sections below. The full odour assessment methodology is presented in Appendix 13.1: Air quality assessment methodology.

Baseline

Data collection

13.5.16 Baseline data collection has been undertaken to obtain information across the study areas. This section provides the approach to collecting baseline data.

13.5.17 The following data sources have been accessed to inform the baseline with respect to air quality:

- Vale of White Horse and South Oxfordshire District Council Air Quality Annual Status Report (ASR) (Vale of White Horse District Council and South Oxfordshire District Council, 2024)
- The Environmental Permitting Regulations – Installations website (EA, 2025)
- The UK Air Information Resource website (Defra, 2025b)

13.5.18 Baseline data collection for the Air quality assessment is desk-based. No project specific surveys to the Air quality assessment have informed the PEI Report.

13.5.19 Receptors have been identified using Geographic Information System (GIS) and spatial mapping data. Human receptors include locations where members of the public could be present for both short or long periods, for example residential properties, schools, hospitals, doctors' surgeries, places of worship, shops, playing fields / parks and Public Rights of Way (PRoW).

13.5.20 An ecological receptor (also referred to in this assessment as a 'designated ecological site') refers to any designated habitat that might be sensitive to dust soiling or other pollutant emissions associated with the Project. Examples may include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI) or Local Wildlife Sites (LWS).

Future baseline

13.5.21 The future baseline relates to known or anticipated changes to the current baseline in the future which will be assessed as part of the Project in the PEI Report. Where climate change may alter future air quality baseline conditions and therefore likely significant effects, this is discussed as part of the In-combination Climate Change Impact (ICCI) assessment which brings together all climate related impacts on aspect assessments, and is presented in Appendix 18.3: In-combination Climate Change Impact Assessment.

13.5.22 Even if the Project were not to come forward, there is likely to be a change to the future baseline conditions because of other factors and developments in proximity. The future baseline represents the conditions that would prevail 'Without Project' in place. The 'Without Project' scenario is used, where appropriate, as a comparator for the assessed case, to show the effect of the Project against an appropriate reference point.

13.5.23 The future baseline for the Air quality assessment includes the following:

- Key developments which have a planning application submitted or approved and are expected to be under construction, and those expected to be operational prior to or during the construction and operation of the Project.
- Predicted impact of the transition to cleaner vehicles and industry resulting in improved air quality, information will be taken from the Defra air quality background database.

- Allowance for background traffic growth that will occur as a result of changes in population and employment over time, adjusted to exclude the contribution of the key developments referenced in the point above.
- Committed transport infrastructure is expected to be in operation prior to or during the construction and operation of the Project.

13.5.24 The following data sources have been used to inform the future baseline with respect to air quality:

- Refer to Chapter 20: Cumulative effects for the methodology used to prepare the list of other developments relevant to the future baseline.
- The UK Air Information Resource website (Defra, 2025b).
- The traffic model (see Chapter 12: Traffic and transport) considers other planned and consented developments.

Construction

Construction dust

13.5.25 The effects from construction of the Project have been assessed using the qualitative approach described in the IAQM dust guidance (IAQM, 2024), which considers the potential for dust emissions from demolition, earthworks, construction and trackout[1] activities.

13.5.26 For each of the dust-generating activities, the IAQM dust guidance (IAQM, 2024) considers three separate effects:

- Annoyance due to dust soiling
- Harm to ecological receptors
- The risk of health effects due to changes in particulate matter exposure

13.5.27 A five-step construction dust assessment process is described in the IAQM dust guidance (IAQM, 2024). This process starts with screening the need for a detailed assessment, based on the proximity of sensitive receptors and nature of the proposed works. If a detailed assessment is required, the next step involves defining the magnitude of the dust emissions and the sensitivity of the area. The overall risk level of potential dust effects is determined by combining two key factors: the magnitude of dust emissions and the sensitivity of the area, following IAQM dust guidance (IAQM, 2024). The magnitude is assessed based on the scale and nature of the dust-generating activities (e.g. demolition, earthworks, construction, trackout) and is classified as small, medium or large. The sensitivity of the area is evaluated by considering the proximity and type of receptors, the baseline PM10 concentrations (including PM2.5), and the number of receptors within defined distance bands (as presented in Figure 13.3: Construction dust buffers and ecological receptors). Once the risk levels are defined, the standard good practice and embedded design mitigation is identified and applied where necessary. The overall risk for

[1] IAQM guidance defines the Trackout as the transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy goods vehicles (HGVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HGVs transfer dust and dirt onto the road having travelled over muddy ground on site.

the Project is then identified with the embedded design and standard good practice mitigation in place. Full details of the construction dust assessment methodology are presented in Appendix 13.1: Air quality assessment methodology.

Construction site equipment

13.5.28 Construction equipment will be used across the whole construction area. Details of the equipment and durations of use are not available for the PEI Report. The PEI Report as a worst case assumes that generators would be present at all construction compounds.

13.5.29 As at this stage it has not been possible to conduct a review of NRMM equipment type and duration of use to understand potential emissions and their location, however this will be carried out for the ES. The assessment for the PEI Report has focused on an overall risk of works taking place across the site and assessment of impacts around compounds where generators and equipment would be used.

13.5.30 Where effects have the potential to occur, the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017) provides an indication of the likely magnitude of impact for short-term impacts as a percentage of the short-term Air Quality Assessment Level (AQAL). For long-term impacts, magnitude of an impact is based on the change in pollutant concentration resulting from the Project as a percentage of the AQAL.

13.5.31 Receptors and their proximities to compounds (as detailed in Section 13.9: Preliminary assessment of likely significant effects) have been identified. Areas of risk, where mitigation is recommended, have been set out. These would be reviewed for the ES.

13.5.32 This assessment considers any mitigation and commitments on emission standards for engines and plant to be used in construction, included within Appendix 2.2: Draft commitments register.

13.5.33 The effect of NRMM impacts on ecological sites is not considered further as generator operation would be intermittent and occur for sporadic periods at differing locations within the draft Order limits throughout the temporary construction stage. It is not considered that emitted pollutants would occur over a long enough time to have a material effect on rates of pollutant deposition.

Vehicle exhaust emissions

13.5.34 Emissions from construction-related traffic movements have the potential to affect local air quality. To assess these potential impacts, a semi-quantitative assessment has been undertaken in line with the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017). The methodology comprises a two-stage process: an initial screening of roads based on preliminary traffic data (AADT and types of vehicles) (as set out above in paragraph 13.4.8) to identify roads where screening thresholds would be exceeded, followed by professional judgment to evaluate whether significant air quality effects are likely to occur at nearby receptors where screening thresholds were exceeded.

13.5.35 The purpose of this assessment is to provide an indicative understanding of potential air quality risks associated with construction traffic emissions. This approach provides a conservative indication of whether pollutant concentrations from traffic emissions may result in exceedances of the relevant air quality standards. When more detailed traffic data becomes available for the ES, the need for detailed modelling will be reviewed.

13.5.36 Construction traffic data provided for the Air quality assessment has been reviewed. Due to the dynamic nature of construction activities, the construction traffic assessment is based on the peak year of construction traffic (2036) that will occur for the Project, this is also in line with Chapter 12: Traffic and transport.

Operation

Vehicle exhaust emissions

13.5.37 The methodology for assessing operational vehicle emissions is in line with the construction traffic assessment, presented in 13.5.34 to 13.5.35 above. The operational traffic assessment has considered the opening year of 2043.

Odour

13.5.38 A Source Pathway Receptor (SPR) assessment has been undertaken in accordance with the IAQM odour guidance (IAQM, 2018).

13.5.39 The initial step in the SPR assessment is to estimate the odour generating potential of the activity, considering the magnitude of the release, how inherently odorous it is, and the relative unpleasantness of the emission. The 'pathway effectiveness' is then determined, by considering the distance from the source, the frequency of exposure and prevailing winds where appropriate, the likely effectiveness of dispersion and terrain between the emission point and receptor location.

13.5.40 Typically, the greatest potential for adverse odour to occur is during periods of stable atmospheric conditions with calm or low wind speeds, generally when wind speeds are less than 3m/s. This reduces dilution and mixing of odours with ambient air and results in higher odour concentrations at receptor locations.

13.5.41 The factors considered in the SPR approach is summarised in Table 13.5.

13.5.42 The magnitude of impact at sensitive receptor locations is determined, and a judgement on the significance of effect is then made. Further details of the odour assessment methodology are presented in Appendix 13.1: Air quality assessment methodology and Figure 13.4 Operational odour source and pathway receptors.

Table 13.5 Risk factors for SPR approach

Source odour potential	Pathway effectiveness	Receptor sensitivity
Factors affecting the source odour potential include: • The magnitude of the odour release • How inherently odorous the materials are and • The unpleasantness (or offensiveness) of the odour.	Factors affecting the odour dispersion to the receptor are: • Distance from source to receptor • Direction/frequency of winds from the source to receptor • The effectiveness of any mitigation/control to reduce the odour to the receptor and • Topography (e.g. presence of hills and buildings can affect air flow and inhibit dispersion and dilution of odour emissions)	High sensitivity receptors are residential dwellings, hospitals and schools. Moderate sensitivity receptors are places of work, commercial/ retail premises and playing/ recreation fields. Low sensitivity receptors are industrial premises, farms, footpaths and roads.

Receptors and receptor sensitivity

Construction dust

13.5.43 The IAQM dust guidance (IAQM, 2024) provides criteria to define receptor sensitivity to dust soiling or health effects of PM_{10} (presented in Appendix 13.1: Air quality assessment methodology). For instance, residential properties and schools are considered as high sensitivity receptors and places of work are defined as medium sensitivity. For ecology nationally designated sites with species sensitive to dust such as lichen would be considered to be high sensitivity receptors and designated sites such as ancient woodlands would be low sensitivity receptors.

Construction site equipment, construction vehicle emissions and operational vehicle emissions

13.5.44 Sensitive human receptors are defined as residential properties/ schools/ hospitals/ care homes that are likely to experience a change in pollutant concentrations. Where required, existing and new human receptors are selected at locations where they would be expected to experience worst-case effects.

13.5.45 Sensitive ecological receptors are defined as those sites whose features have been designated as sensitive to air pollutants, either directly or indirectly.

Magnitude of impact

Construction dust

13.5.46 As summarised above (paragraph 13.5.26) the magnitude of impact takes into account the dust emissions from demolition, earthworks, construction and trackout activities.

13.5.47 For construction dust, the magnitude of impacts which feeds into the assessment of risk is summarised in Appendix 13.1: Air quality assessment methodology.

Construction site equipment, construction vehicle emissions and operational vehicle emissions

13.5.48 The EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017) provides an approach to determining the air quality effects arising from the Project.

13.5.49 Firstly, magnitude of impact descriptors are determined based on the incremental change as a proportion of the relevant assessment level, in this instance the annual mean NO_2 / PM_{10} standards. The change is then examined in relation to the predicted total pollutant concentrations in the assessment years (2036 for construction and 2043 for operation) and the relationship with the annual mean objectives. Finalised traffic data was not available during the preparation of the PEI Report, and therefore a detailed assessment using dispersion modelling has not been undertaken at this stage. Therefore, the magnitude of incremental change was not quantified at this stage, and the risk of significant effects was therefore determined based on the use of the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017) and professional judgement.

13.5.50 The assessment framework for determining magnitude impact descriptors at each of the assessed receptors is shown in Table 13.6 and Table 13.7, for annual concentrations and short-term concentrations respectively.

Table 13.6 Magnitude of impact descriptors for annual mean concentrations

Annual average concentrations at receptor in assessment year*	% change in concentrations relative to annual mean objectives*			
	1	2-5	6-10	>10
75% or less of objective	Negligible	Negligible	Small	Medium
76-94% of objective	Negligible	Small	Medium	Medium
95-102% of objective	Small	Medium	Medium	Large
103-109% of objective	Medium	Medium	Large	Large
110% or more of objective	Medium	Large	Large	Large
*Note: *Numbers are rounded to whole numbers for the assessment.*				

Table 13.7 Magnitude of impact descriptors for short-term concentrations

Short-term concentrations at receptor in assessment year	Impact descriptor
<10% of standard	Negligible
11–20% of standard	Small
21–50% of standard	Medium
>51% of standard	Large
*Note: *Numbers are rounded to whole numbers for the assessment.*	

Odour

13.5.51 As summarised above (paragraph 13.5.42) the magnitude of impacts is based on the factors shown in Table 13.5. These allow a determination of the source odour potential, along with the risk of an available pathway to a receptor.

13.5.52 For odour, the magnitude of impacts which feeds into the assessment of risk is summarised in Appendix 13.1: Air quality assessment methodology.

Significance of effect

13.5.53 The combination of sensitivity of receptor, magnitude of impact, and risk has been used as a general guide to determine whether effects are significant or not significant in this assessment. In circumstances where the Project can be judged in isolation, a medium or large magnitude of impact would likely give rise to a significant effect, and a negligible or small magnitude of impact would not result in a significant effect. This approach is in line with the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017). The resultant effects may be either adverse, beneficial or neutral, depending on the nature of the impact.

13.5.54 Given the various assessment assumptions and limitations for air quality at this stage (referenced under paragraph 13.7.3), the assessment of likely significant effects for this aspect has been based on professional judgement for this preliminary assessment.

13.5.55 For this preliminary assessment, the assessment of effects has assumed that 'embedded design mitigation' and 'standard good practice mitigation' relevant to the Air quality assessment are in place (these measures are presented in Section 13.8: Embedded design mitigation and standard good practice). Nevertheless, as noted in Section 13.9:

Preliminary assessment of likely significant effects, the preliminary assessment assumes that additional mitigation that may reduce any identified likely significant adverse effects is not applied, as the viability, nature, and extent of these are not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the implementation of all mitigation, including additional mitigation) has not been completed for this preliminary assessment; this will be undertaken in the ES.

Construction dust

13.5.56 The IAQM dust guidance (IAQM, 2024) states that, with appropriate mitigation in place, the effect of construction dust would not be significant. This assessment has therefore focused on determining the risk of dust nuisance or harm to health and recommends an appropriate level of mitigation to ensure the Project would not give rise to significant effects from construction dust.

Construction site equipment, construction vehicle emissions and operational vehicle emissions

13.5.57 The impact descriptors (presented in Table 13.6 and Table 13.7) for each of the assessed receptors has been used as a starting point for making judgements on the effects of the Project. However, other considerations are also accounted for, such as:

- The existing and future air quality in the absence of the Project.
- The extent of current and future population exposure to the impacts.
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

Operational odour emissions

13.5.58 For odour the significance has been determined based on the risk of odour exposure derived by the SPR assessment and the receptor sensitivity. The full SPR process to determine significance of effect that will be applied to the ES assessment has been set out in Appendix 13.1: Air quality assessment methodology.

Assessment of cumulative effects

13.5.59 The cumulative effects assessment approach for both inter- and intra-project cumulative effects is broadly set out in Chapter 20: Cumulative effects. However, for this aspect an alternative approach to the assessment of inter-project cumulative effects has been undertaken.

13.5.60 For construction dust impacts, receptors from nearby cumulative developments would be considered as part of baseline, should they become operational during the construction phase of the Project. In terms of dust generated during the construction of the cumulative developments, this is assumed to be managed following best practice guidance. It is also assumed that appropriate mitigation measures will be applied and therefore the resulting effects are unlikely to be significant.

13.5.61 The Air quality assessment undertaken for transport related impacts is, in general, inherently cumulative, as the traffic data considers other developments within the future baseline scenario. In cases where a 'reasonably foreseeable' scheme may have a material effect on the operation of the transport networks in the vicinity of the Project (such as Dalton Barracks), subject to scoping discussions with highway authorities, separate

transport modelling scenarios with and without these development/s will be undertaken for the DCO application to identify the cumulative effects. This chapter followed the same approach for transport related impacts for the assessment of cumulative effects. Further information on the transport modelling methodology is available in Chapter 12: Traffic and transport.

13.5.62 For operational odour, the risks due to cumulative effects from other odour related activities is considered to be unlikely. There are no other sources identified in the vicinity which could lead to odour impacts. For any sources in the area which are further afield it is assumed best practice design and mitigation measures would be applied to those activities and therefore any interaction would be unlikely to result in significant cumulative effects.

13.5.63 The outcomes of the inter-project cumulative effects assessment are reported in Chapter 20: Cumulative effects. The intra-project cumulative effects assessment is summarised within Chapter 20: Cumulative effects, and within Chapter 20 signposts are provided to the location of the intra-project cumulative effects assessment (where it has been possible to provide at this stage).

13.6 Baseline conditions

13.6.1 To assess the significance of effects arising from the Project in relation to air quality, it is necessary to identify and understand the baseline environment within the study area. This provides a reference state against which any potential effects on air quality can be assessed.

13.6.2 This section outlines a description of the existing and future air quality conditions within the 2km study area, in line with the details provided in Section 13.4. Existing or baseline ambient air quality refers to the concentration of relevant substances that are already present in the environment. These are present from various sources, such as industrial processes, commercial and domestic activities, traffic, and natural sources.

Existing baseline

13.6.3 This assessment has considered existing baseline data gathered from desk-based information and is presented with references below.

13.6.4 The following sections provide high level details on the current baseline and further information is presented in Appendix 13.2: Air quality baseline data.

Local air quality sources

Industrial

13.6.5 Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met and ensuring that any releases to the environment are minimised or rendered harmless. Regulated (or prescribed) industrial processes are classified as Part A or Part B processes, regulated through the Pollution Prevention and Control (PPC) system. The larger more polluting processes (Part A) are regulated by the Environment Agency, and the smaller fewer polluting ones (Part B) by the local authorities. Local authorities tend also to regulate only for emissions to air, whereas the Environment Agency regulates emissions to air, water and land.

13.6.6 There are six Part A industrial processes with emissions to air identified within the 2km study area, as shown in Table 1.1: Part A processes in Appendix 13.2: Air quality baseline data. One Part A industrial process is located within the draft Order limits, and this is Steventon Road Power Generation Facility operated by ARL 028 Limited (Permit EPR/KP3403BX).

13.6.7 The contribution of all industrial processes to local air quality are assumed to be included in the background ambient air pollution concentrations presented in Appendix 13.2: Air quality baseline data.

Road

13.6.8 In recent decades, atmospheric emissions from transport on a national basis have grown to match or exceed other sources in respect to many pollutants, particularly in urban areas. The local air quality around the Project is expected to be influenced by vehicle emissions; the notable roads are A34 to the east, A417 to the south, A338 to the west and A415 to the north.

Rail

13.6.9 The Great Western Main Line (GWML) between Didcot Parkway railway station and Swindon railway station is present within the draft Order limits. The railway is electrified and not fuelled by diesel according to the LAQM TG22 guidance (Defra, 2022), as such, emissions to air are considered to be negligible.

Local air quality

13.6.10 The Environment Act 2021 requires local authorities to report to Defra on local air quality and local air quality management within their local authority area. This also requires an assessment of compliance with the relevant limit or objective values. The draft Order limits cover two local authorities, the Vale of White Horse District Council and South Oxfordshire District Council.

13.6.11 Where air quality objectives are not predicted to be met, local authorities must declare the area as an AQMA. In addition, local authorities are required to produce an Air Quality Action Plan (AQAP) which includes measures to improve air quality in the AQMA.

13.6.12 There are two AQMAs within 2km of the draft Order limits (Figure 13.2: Air quality monitoring locations and Air Quality Management Areas) comprising:

- Abingdon AQMA
- Marcham AQMA

13.6.13 Both of these AQMAs have been declared for exceeding the NO_2 objective and limit value of 40µg/m^3 and have identified road traffic as a predominant source of pollution.

Local monitoring data

13.6.14 Both Vale of White Horse District Council and South Oxfordshire District Council have undertaken automatic and diffusion tube monitoring within the 2km study area. Information from the monitoring has been taken from the 2024 Annual Status Report (Vale of White Horse District Council and South Oxfordshire District Council, 2024) and it has been used to establish baseline air quality conditions and is provided in the paragraphs that follow. A summary of the local monitoring data is provided in the paragraphs that follow.

Automatic monitoring

13.6.15 There is one automatic monitoring station for NO_2 concentrations within 2km of the draft Order limits, presented in Table 1.2 of Appendix 13.2: Air quality baseline data and shown on Figure 13.2: Air quality monitoring locations and Air Quality Management Areas.

13.6.16 There were no recorded exceedances of the NO_2 annual and hourly mean standards (40µg/m^3 and 200µg/m^3 not to be exceeded more than 18 times per year) between 2019 and 2023.

Diffusion tube monitoring

13.6.17 There are 33 diffusion tubes with 2km of the draft Order limits. The details of these monitors are provided in Table 1.4 of Appendix 13.2: Air quality baseline data and shown on Figure 13.2: Air quality monitoring locations and Air Quality Management Areas. The annual mean NO_2 concentration for 2019-2023 are shown in Table 1.3 within Appendix 13.2: Air quality baseline data. There were two roadside/ kerbside locations (VS32 and VS38) that exceeded the annual Air Quality Objective of 40µg/m^3, within 2km buffer of the draft Order limits, in 2019. The maximum NO_2 concentration recorded by these sites in 2019 was 41.4µg/m^3 at the VS38 roadside diffusion tube site approximately 0.5km north of the draft Order limits, since then the concentrations have reduced to 29.8µg/m^3 in 2023.

13.6.18 All other monitoring sites within 2km of the draft Order limits are below the standards between 2019-2023.

Background concentrations

13.6.19 Background concentrations refer to the existing levels of pollution in the atmosphere, produced by a variety of stationary and non-stationary sources, such as roads and industrial processes. The Defra website (Defra, 2021) includes estimated background pollutant concentrations for NOx, NO_2, PM_{10} and $PM_{2.5}$ for each 1km x 1km Ordnance Survey (OS) Grid square in the UK.

13.6.20 The Defra background concentrations for NO_2 are well below the standard of 40µg/m^3 across the draft Order limits. The highest background NO_2 concentration, in 2023, was 10.7µg/m^3, encompassing the A34 and west of Drayton areas. The lowest NO_2 background concentration was 5.5µg/m^3, near to the south-west boundary of the draft Order limits.

13.6.21 The background concentrations of NOx (relevant to ecological receptors) in 2023 were all below the standards for the protection of vegetation of 30µg/m^3, within the draft Order limits.

13.6.22 The 2023 background concentrations of PM_{10} did not exceed the standard (40µg/m^3). The highest concentration within the draft Order limits was 15.5µg/m^3 and the lowest was 10.9µg/m^3. For $PM_{2.5}$, the highest background concentration was 8.1µg/m^3 and the lowest concentration was 6.5µg/m^3, both concentrations are below the standard of 10µg/m^3.

Summary

13.6.23 The Vale of White Horse District Council and South Oxfordshire District Council monitoring locations that are within the 2km study area provide good coverage at the draft Order limits boundary in Marcham, Abingdon and Drayton, and they are considered to be representative. All monitoring data for NO_2 was below their relevant standards in the past

five years, except for two monitoring locations near the designated AQMAs. On this basis it is not considered that additional Project specific baseline monitoring is required.

13.6.24 For other areas within the draft Orders limit, the Defra background data are considered to be representative where relevant local emission sources have been accounted. Defra background data indicate NO_2, $PM_{2.5}$ and PM_{10} concentrations are below their respective annual air quality standards.

Future baseline

13.6.25 Background air pollutant concentrations are currently available using 2018 as a base year for projections (Defra, 2021). These are predicted to improve over time due to reductions in emissions resulting from:

- Reductions in transport emissions resulting from improvements in fuel efficiency and uptake in low emission vehicles
- General reduction in the use of fossil fuels
- Reductions in pollutant emissions from agricultural sources due to improvements in management envisaged in the 2019 Clean Air Strategy (Defra, 2019)
- Improved emission standards for NRMM and static generators

13.6.26 For this assessment, it has been assumed that the Project will have a peak construction year in 2036 and an opening year in 2043. Note that the Defra background projections are not available for years beyond 2040. Therefore, the background concentrations for 2040 have been used as a proxy and are considered representative for 2043.

13.6.27 The 2036 Defra background concentrations for Nitrogen Dioxide (NO_2) are predicted to be well below the standard of 40µg/m^3 across the draft Order limits. The highest background NO_2 concentration in 2036 is predicated to be 7.7µg/m^3 and the lowest concentration is 3.7µg/m^3.

13.6.28 The 2036 background concentrations of NOx (relevant to ecological receptors) are below the limit value for the protection of vegetation of 30µg/m^3 within the draft Order limits. The highest background concentration of NOx is predicted to be 9.9µg/m^3 and the lowest is 4.7µg/m^3.

13.6.29 The 2036 background concentrations of PM_{10} would be well below the standard (40µg/m^3). The highest concentration within the draft Order limits is predicted to be 14.5µg/m^3 and the lowest is 9.8µg/m^3. For $PM_{2.5}$, the highest background concentration is predicted to be 7.4µg/m^3 and the lowest concentration is 5.5µg/m^3, both concentrations being below the standard of 10µg/m^3 (to be achieved by 2040).

13.6.30 The 2040 Defra background concentrations for NO_2 are predicted to be well below the standard of 40µg/m^3 across the draft Order limits. The highest background NO_2 concentration in 2040 is predicated to be 7.4µg/m^3 and the lowest concentration is 3.6µg/m^3.

13.6.31 The 2040 background concentrations of NOx (relevant to ecological receptors) are below the limit value for the protection of vegetation of 30µg/m^3 within the draft Order limits. The highest background concentration of NOx is predicted to be 9.5µg/m^3 and the lowest is 4.2µg/m^3.

13.6.32 The 2040 background concentrations of PM_{10} would be well below the standard (40µg/m^3). The highest concentration within the draft Order limits is predicted to be 14.3µg/m^3 and the lowest is 9.6µg/m^3. For $PM_{2.5}$, the highest background concentration is predicted to be 8.1µg/m^3 and the lowest concentration is 5.3µg/m^3, both concentrations being below the standard of 10µg/m^3 (to be achieved by 2040).

13.6.33 The Defra modelled concentrations for the year 2040 show reductions in both NO_2 and NO_x levels within the draft Order limits compared to the 2023 baseline. The Defra background shows minimal changes in concentrations of PM_{10} and $PM_{2.5}$ between 2023 and 2040. Therefore, it is considered that the future baseline in relation to air quality would not change significantly from that described in the baseline within the timeframe for the construction of the Project.

13.6.34 The other developments which will form part of the future baseline identified in Chapter 20: Cumulative effects have been reviewed, and do not materially alter the future baseline assessed for this aspect.

Air quality receptors considered in the preliminary assessment

13.6.35 Table 13.8 shows the air quality receptors (including both human and ecological receptors) in the study area that have been considered in the preliminary assessment for the PEI Report. The sensitivity of each receptor is defined in the table with commentary justifying the sensitivity category assigned. The table also identifies the area ID and effect ID(s) relevant to each receptor. The effect IDs are unique identifiers of each effect assessed (discussed further in Appendix 13.4: Preliminary assessment of likely effects for air quality), whilst the area ID relates to the spatial extent of the receptor assessed. Figures 13.1, 13.3 and 13.4 show the locations of the receptors that have been spatially defined for the preliminary assessment for the PEI Report, with relevant Area IDs noted. Table 13.8 signposts to which figure shows which area ID. Further data gathering to inform the ES will inform any revisions to the receptors assessed, and their defined spatial extents, where required.

Table 13.8 Receptors assessed in the preliminary assessment

Receptor Name (Area-ID)	Sensitivity	Sensitivity Commentary	Effect-ID(s)
Sensitive human receptors to vehicle emissions (shown on Figure 13.1: Affected road network and sensitive human receptors included in the assessment)			
27B High Street, Steventon (H01)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the B4017 High Street.	AQ-7
1 the Green (H02)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the Hanney Road.	AQ-9
22 Crane Avenue (H03)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the A34 north.	AQ-10, AQ-13
97 Steventon Road (H04)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the A34 middle.	AQ-11, AQ-12
28 Mackenzie Avenue (H05)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the A34 south.	AQ-14, AQ-15
50 Frilford Road (H06)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the Frilford Road.	AQ-16, AQ-17
Pedestrian/Cycle link (A415 Marcham Rd) (H07)	Moderate	This receptor represents the nearest road kerb, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the A415 Marcham Road.	AQ-18, AQ-19
Marcham Road north (H08)	Moderate	This receptor represents the nearest commercial facility, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the A415 Marcham Road.	AQ-21, AQ-22
Pedestrian/Cycle link (Southern site access) (H09)	Moderate	This receptor represents the nearest road kerb, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the site access.	AQ-23, AQ-24

Receptor Name (Area-ID)	Sensitivity	Sensitivity Commentary	Effect-ID(s)
98 Westminster Way (H10)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the A34 north between A423 and A44.	AQ-25
Pedestrian/Cycle link (Compound A1) (H11)	Moderate	This receptor represents the nearest road kerb, selected to represent the reasonable worst-case exposure to potential vehicle emissions on the southern site access.	AQ-20
Sensitive human receptors to construction dust (shown on Figure 13.3: Construction dust buffers and ecological receptors)			
Residential receptors within 250m of the draft Order limits	High	This buffer represents the residential properties located within 250m of the draft Order limits, selected to represent the reasonable worst-case exposure to potential construction dust emissions away from the draft Order limits.	AQ-6
Operational odour receptors (shown on Figure 13.4: Operational odour sources and pathway receptors)			
32 Willow Way (SPR01)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential odour emissions associated from maintenance regime of the tunnel.	AQ-27
32 Willow Way (SPR01)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential odour emissions associated from the operation of the Abingdon Sewage Treatment Works (STW) upgrade.	AQ-28
8 Blenheim Orchard (SPR02)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential odour emissions associated with foul drainage in south-west corner.	AQ-26
14 Haywards Road (SPR03)	High	This receptor represents the nearest residential property, selected to represent the reasonable worst-case exposure to potential odour emissions associated from the operation of Drayton STW connections.	AQ-33
Ecological receptors sensitive to construction dust (shown on Figure 13.3: Construction dust buffers and ecological receptors)			
Marcham Salt Spring Local Wildlife Sites (E01)	Low	The ecological site is considered a ‘low sensitivity receptor' in accordance with the IAQM dust guidance.	AQ-30

Receptor Name (Area-ID)	Sensitivity	Sensitivity Commentary	Effect-ID(s)
Cowslip Meadow Local Wildlife Sites (E02)	Low	The ecological site is considered a ‘low sensitivity receptor' in accordance with the IAQM dust guidance.	AQ-32
The Cuttings and Hutchins Copse Local Wildlife Sites (E03)	Low	The ecological site is considered a ‘low sensitivity receptor' in accordance with the IAQM dust guidance.	AQ-31

13.7 Project parameters, assumptions and limitations

13.7.1 Chapter 2: Project description relies on the use of relevant parameters and assumptions to allow flexibility in the final design of the Project, in accordance with the Rochdale envelope approach (Planning Inspectorate, 2018). This preliminary assessment for the Air quality aspect uses the parameters and assumptions outlined in Chapter 2: Project description as well as additional parameters and assumptions specific to this aspect to ensure the reasonable worst-case scenario is considered within this assessment.

Project parameters and assumptions specific to this aspect

13.7.2 Table 13.9 identifies the Project parameters, components and activities relevant to this assessment where assumptions specific to the preliminary Air quality assessment have been generated.

Table 13.9 Project parameters and assumptions forming the basis of assessment

Project parameter / component / activity	Assumption (basis of assessment)
Construction	
Dust assessment: location of demolition, earthworks and construction activities (including material excavation, handling and stockpiling)	All demolition, earthworks and construction activities were assumed to take place across all locations within the draft Order limits, to account for the wide area over which these works could take place. As concrete batching activity is not specified at this stage, it is assumed that concrete batching could take place at any location within the draft Order limits. The above assumptions are considered to be the reasonable worst case as the exact locations of these works are not known at this stage. The likely effects would likely to be lessened, as the area for earthworks and concrete batching would not cover the entire draft Order limits.
Dust assessment: trackout activities	The number of trackout vehicles is not available at this stage for assessing the dust impacts, therefore more than 50 HGV outward movements per day has been assumed and used in the construction dust assessment, as a conservative approach.
Dust assessment: mitigation for dust suppression	The identified standard good practice mitigation measures outlined in Appendix 2.2: Draft commitments register for reducing construction dust related impacts would be considered effective.
Construction assessment: site equipment/ NRMM	Construction site equipment and NRMM are assumed to operate around the designated construction compound areas located within the draft Order limits. While the exact location is not known at this stage, the assumption represents a reasonably worst case, as construction works are expected to be concentrated in these areas. The identified standard good practice measures outlined in Appendix 2.2: Draft commitments register for NRMM related

Project parameter / component / activity	Assumption (basis of assessment)
	impacts would reduce emissions and associated impacts to a negligible level.
Operation	
Combustion sources	It is assumed that no combustion would be required on site during operation.
Operational assessment: odour	It is assumed unpleasant odour could arise as a result of the Project from four specific activities: • operation of the Abingdon STW upgrade • the switch or addition of a Drayton STW connection • the maintenance regime to remove zebra/ quagga mussels and • the potential provision of a nature based solution/reed bed for foul drainage discharge treatment from the proposed buildings associated with the nature education centre. At this stage the detailed designs or connections are not available therefore it is conservative to assume a potential odour risk could occur. This will be reviewed once details are available and they will be assessed in the ES.

Assessment assumptions and limitations

13.7.3 This section identifies the aspect-specific assumptions and limitations for the preliminary Air quality assessment including those related to the availability of data to inform the assessment and assumptions used in the methodology. The preliminary assessment of effects in this chapter is preliminary and will be revisited in the ES in light of data available at that time and the design taken forward for submission. Assessments reported within this PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is incomplete. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 13.10: Next steps.

- Traffic data is considered to be indicative at this stage and therefore a proportionate assessment has been carried out to review the likelihood of significant effects arising as a result of the Project. Professional judgement has been used to determine the potential air quality effects from the construction and operational traffic assessment, in conjunction with the EPUK & IAQM land-use planning guidance (EPUK and IAQM, 2017).
- All construction compounds and work areas would be expected to require use of construction equipment and generators. Distribution Network Operator (DNO) connections may be viable to supply electricity to the compounds. However, any DNO connections remain subject to agreement and cannot be guaranteed at this time.

Therefore, the assessment has assumed as a worst case that diesel- or gas-powered generators would be present at all construction compounds.

- An initial assessment of potential odour emissions from the mussel clearance for maintenance requirements has been undertaken. Further information on the clearance process and the release of ammonia gas will be required during the ES to confirm the magnitude of the odour emissions.

13.8 Embedded design mitigation and standard good practice

13.8.1 As described within Chapter 4: Approach to the environmental assessment, identified embedded design (primary) mitigation and standard good practice (tertiary) measures are assumed to be applied within this preliminary assessment, to reduce the potential for environmental effects.

13.8.2 Embedded design mitigation identified for the Project at this stage are noted in Chapter 2: Project description. These, and standard good practice measures to be applied, are described in greater detail within Appendix 2.2: Draft commitments register.

13.8.3 Table 13.10 and Table 13.11 list the embedded design mitigation and standard good practice measures applicable to the preliminary Air quality assessment during construction and operation respectively, including the unique commitment IDs that relate to the Draft commitments register (where further detail on each can be referred to). The tables also state the purpose of each mitigation and the applicable securing mechanisms.

Table 13.10 Construction: Relevant embedded design mitigation and standard good practice measures, their purpose and securing mechanism

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
Design the Project to reduce the need to import material as far as practicable (ED-04)	This would limit the number of HDV deliveries needed, thereby reducing traffic congestion and emissions during construction.	Under the terms of the DCO
Use of rail to transport bulk construction materials, if practicable (ED-05)	This would reduce the number of HDV deliveries needed, reducing traffic congestion and emissions during construction.	Under the terms of the DCO
On-site Construction Traffic Management Measures (SGP-21)	The implementation of traffic management measures would reduce the need to use public roads and therefore potential associated dust effects.	Code of Construction Practice (CoCP)
Standard good practice measures for road cleanliness (SGP-22)	The measure would reduce the extent of trackout from HDVs leaving the site and reduce the generation of dust on the local roads. Measures would also reduce dust emissions on haul roads and can reduce emissions through control of speeds and reduced idling.	CoCP

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
Standard good practice dust mitigation measures (SGP-23)	Applying mitigations to demolition, earthworks, construction, and potential trackout activities in line with the IAQM dust guidance will reduce impacts from construction dust generation and reduce trackout onto local roads.	CoCP
Standard good practice measures for reducing vehicle, plant and machinery emissions (SGP-24)	This would reduce emissions generated by construction activities, construction site equipment and the use of HDVs.	CoCP

Table 13.11 Operation: Relevant embedded design mitigation and standard good practice measures, their purpose and securing mechanism

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
Drainage Strategy to align with national and local planning policy and guidance (ED-22)	This would reduce potential odour emissions from the operation of sewage treatment plant and drainage catchment.	Under the terms of the DCO
Implementation of odour management plan (SGP-44)	This would ensure air quality impacts from odour emissions are reduced during the operation of the sewage treatment works upgrade.	Under the terms of the DCO
Standard good practice measures to mitigate Greenhouse Gases (GHG) during operation (SGP-50)	The provision of electric vehicle charging facilities at the car parks will support and facilitate electric vehicles using the site and reduce emissions from petrol or diesel vehicles.	Under the terms of the DCO

13.9 Preliminary assessment of likely significant effects

Introduction

13.9.1 This section summarises the findings of the preliminary assessment of effects for air quality. The judgement of significance has been made assuming that embedded design mitigation and standard good practice mitigation relevant to air quality is applied (these are noted in Section 13.8: Embedded design mitigation and standard good practice and provided in detail in Appendix 2.2: Draft commitments register).

13.9.2 As noted in paragraphs 13.1.7 and 13.1.8, assessments reported within this PEI Report chapter are considered a reasonable 'worst case' in line with the precautionary approach

that has been taken. The next steps for the Air quality assessment are set out in Section 13.10: Next steps.

13.9.3 Appendix 13.4: Preliminary assessment of effects for air quality, sets out the preliminary assessment of effects, receptor by receptor, for the construction and operation stages respectively. No likely significant effects have been identified in relation to air quality and therefore additional mitigation is not anticipated to be required. The appendix includes tables that identify the following for each effect:

- Receptor name, the Effect ID (a unique identifier for each effect), and sensitivity category
- Project components and activities giving rise to the effect
- Relevant embedded mitigation and standard good practice mitigation (with unique Commitment ID, which relates to Appendix 2.2: Draft commitments register)
- Magnitude of impact category and narrative
- Initial category of effect significance (significant or not significant), including whether it is adverse, beneficial or neutral (taking account of embedded design mitigation and standard good practice mitigation)
- Description and duration of the effect

Summary of likely significant construction effects

13.9.4 The preliminary assessment of effects for air quality has concluded no likely significant effects during construction with the implementation of standard good practice and embedded design mitigation. Additional mitigation is therefore not anticipated to be required.

Summary of likely non-significant construction effects

13.9.5 This section summarises the justification for construction effects that are initially anticipated to be 'non-significant' through the preliminary assessment of effects for air quality. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce adverse effects to be non-significant.

13.9.6 Construction effects have been assessed in relation to construction dust, effects on air quality due to emissions from NRMM and effects from construction-related off-site traffic.

13.9.7 Effects from dust may arise as a result of all/most construction activities. This could affect residential receptors within 250m of the draft Order limits. The impact magnitude is likely to be large for demolition, earthworks, construction and trackout, resulting in a high risk of potential dust impacts. However, with the implementation of the following standard good practice and embedded design mitigation measures these would be not significant:

- Design the Project to reduce the need to import material as far as practicable
- Use of rail to transport bulk construction materials
- Standard good practice measures for road cleanliness
- Standard good practice dust mitigation measures
- Standard good practice measures for reducing vehicle and plant emissions

13.9.8 Similarly, effects have been assessed in relation to the following ecological receptors. The impact magnitude is likely to be large for demolition, earthworks, construction and trackout, resulting in a medium risk of potential dust impacts. However, with the implementation of the above standard good practice and embedded design mitigation measures these effects would not be significant:

- Marcham Salt Spring LWS
- The Cuttings and Hutchins Copse LWS
- Cowslip Meadow LWS

13.9.9 For NRMM, effects could occur at sensitive receptors (such as residential properties) that are within the study area (area of up to a 100m radius from the construction areas/ compounds). The assessment indicates sensitive receptors are not present within the study area. As such, effects due to NRMM are considered to be not significant. However, the following standard good practice and embedded design mitigation measures would be incorporated into the Project to ensure these effects would not be significant:

- Standard good practice measures for reducing vehicle and plant emissions.

13.9.10 Vehicle exhaust emissions from construction traffic are typically considered to be of small or negligible magnitude due to relatively small changes in pollutant concentrations for annual mean NO2 and PM10. With the implementation of the following standard good practice and embedded design mitigation measures these would not be significant:

- Design the Project to reduce the need to import material as far as practicable
- Use of rail to transport bulk construction materials
- Standard good practice measures for reducing vehicle and plant emissions

13.9.11 For ecological receptors, the traffic data for construction was screened using the relevant criteria set out in the Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations. This screening exercise concluded that traffic data for the peak construction year 2036 and opening year 2043 would not exceed this criteria and therefore vehicle exhaust emissions assessment on ecological receptors has not been assessed further within this PEI Report and traffic data will be reviewed for the ES.

Summary of likely significant operational effects

13.9.12 The preliminary assessment of effects for air quality has concluded no likely significant effects during operation with the implementation of standard good practice and embedded design mitigation. Additional mitigation is therefore not anticipated to be required.

Summary of likely non-significant operational effects

13.9.13 This section summarises the justification for operational effects that are initially anticipated to be not significant through the preliminary assessment of effects for air quality. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce adverse effects to be non-significant.

13.9.14 Operational effects have been assessed in relation to emissions from operational off-site traffic and odour from operational activities.

13.9.15 Vehicle exhaust emissions from operational traffic are typically considered to be of small or negligible magnitude due to relatively small changes in pollutant concentrations for annual mean NO_2 and PM_{10}. With the implementation of the following standard good practice and embedded design mitigation measures these effects would not be significant:

- Standard good practice measures to mitigate GHG during operation.

13.9.16 Operational odour effects may be caused by the following activities:

- Operation of the Abingdon STW upgrade
- The switch or addition of a Drayton STW connection
- The maintenance regime to remove zebra/ quagga mussels
- The potential provision of a nature based solution/reed bed for foul drainage discharge treatment from the proposed buildings associated with the nature education centre

13.9.17 The sensitivity of the nearest receptors is considered to be high, as they are all residential properties. A SPR assessment has been carried out following the IAQM odour guidance. The source odour potential for the above sources is considered to be moderate as it is understood that the mussel clearance process would be temporary (expected to occur every five to 10 years and the removal duration would be around six to eight weeks) and carried out using suction excavator units. This would adhere to best practice methods such that any odour associated with debris would be effectively managed and pose minimal odour risk.

13.9.18 Additional access strategy and ventilation designs are under consideration to refine the requirements and timescales for mussel clearance, further mitigating potential odour impacts. In addition, the proposed STW upgrade and the provision of reed bed would follow best practice methods for design and operation, in particular the pipework for STW upgrade would be fully enclosed. The pathway effectiveness is considered to be moderately effective, as these odour sources would be located in open areas and disruption of dispersion would be unlikely. The interaction between the source odour potential, odour pathway and sensitivity of receptors has resulted in a low risk of odour exposure. With the implementation of the following standard good practice and embedded design mitigation measures these would be not significant:

- Drainage Strategy to align with national and local planning policy and guidance
- Implementation of odour management plan

13.10 Next steps

13.10.1 As part of next steps, the Project is proactively developing the design, refining the construction approach and continuing to define the environmental baseline, in conjunction with ongoing consultation and engagement. These activities will inform the EIA process and provide a robust evidence base for the ES.

13.10.2 Where applicable, embedded design mitigation and standard good practice have been applied to the assessment. No likely significant air quality effects have been identified within

the preliminary assessment during the construction or operation of the Project. As such no additional mitigation is required at this stage of the assessment.

13.10.3 The next steps anticipated to be undertaken in relation to the Air quality assessment prior to completion of the ES and submission of the DCO application are explained below:

- Assessment of construction site equipment – further details on the compound locations will be required to assess NRMM emissions at nearby receptors.
- Traffic screening and detailed modelling assessment (where required) – a screening assessment will be conducted to determine whether a detailed modelling assessment is required. When updated traffic data becomes available, this will be revisited to ensure that any likely significant air quality and ecological effects are identified and assessed. Ongoing engagement with Natural England will be carried out to discuss and confirm the methodology for assessing sensitive ecological receptors in preparation for the ES.
- Construction odour – further detailed information, on site conditions and materials will be reviewed as detailed in Table 13.3. Should any potential odour sources be identified during the assessment for the ES, this will be revisited to identify the likely significance of odour emissions from the Project.
- Operational odour – further information on the clearance process will be required to determine the magnitude of odour emissions. This will be revisited to identify during the assessment for the ES to consider the likely significance of odour emissions from the Project, especially from operational activities, and their potential effects on nearby receptors.

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