Hampshire Water Transfer and Water Recycling Project

Environmental Statement – Chapter 6 Air quality and odour

VOLUME NUMBER: 6

PLANNING INSPECTORATE NUMBER: WA010002

APPLICATION DOCUMENT REFERENCE: 6.1

APFP REGULATION: 5(2)(a)

~~May~~23 November 2026

Version ~~0~~1

from Southern Water

Document Control		
Title	ES Chapter 6 Air quality and odour	
Version History		
Version	**Date**	**Status/Reason for Issue**
Version 0	21 May 2026	DCO Submission
Version 1	23 November 2026	Deadline 1

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6 Air quality and odour

6.1 Introduction

6.1.1 This document has been updated at Deadline 1 to align terminology used with other DCO Application documents. References to other Application documents have not been updated from the original submission. Please refer to the latest version of the Guide to the Application (Document reference 1.3, Volume 1) for the list of current versions of documents.

~~6.1.1~~6.1.2 This chapter provides the assessment of the likely significant effects on air quality and odour from the construction, operation and decommissioning of the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Proposed Development'), which is being progressed by Southern Water Services Limited ('the Applicant').

~~6.1.2~~6.1.3 This chapter details the legislation, policy and guidance that is relevant to air quality and odour, summarises the engagement and consultation undertaken to date, sets out the scope and methodology of assessment, and describes the baseline environment. Following this, the likely significant effects of the Proposed Development on air quality and odour are assessed taking account of embedded primary and tertiary mitigation within the design. The need for any secondary mitigation is then considered along with any proposals for monitoring and/or enhancement. The chapter concludes with a summary of residual effects.

~~6.1.3~~6.1.4 Whilst this Environmental Statement (ES) presents an assessment of the effects that may occur from decommissioning activities of the Proposed Development, the Applicant is not seeking consent for decommissioning.

~~6.1.4~~6.1.5 Air quality and odour topics considered within this chapter for the Proposed Development are:

1. Effects on human and ecological receptors as a result of dust and particulate matter emissions
2. Effects on human and ecological receptors as a result of Non-Road Mobile Machinery (NRMM) emissions
3. Effects on human and ecological receptors as a result of road traffic emissions
4. Effects on human receptors as a result of odour emissions

~~6.1.5~~6.1.6 This chapter should be read in conjunction with ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6), which describes the development parameters against which the effects considered in this chapter have been assessed.

~~6.1.6~~6.1.7 In addition, this chapter should be read alongside relevant parts of other chapters in Volume I, namely:

1. ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6) - assesses the likely significant effects of the Proposed Development on designated sites, habitats, protected and notable species, and consequential effects on ecological receptors, which could be

affected by changes in air quality from dust and particulate matter emissions, road traffic and NRMM emissions.

2. ES Chapter 12 Land use and agriculture, Volume I (Document reference 6.1, DCO Volume 6) - assesses effects on amenity, taking into account changes in air quality.
3. ES Chapter 17 Socio-economics, tourism and health, Volume I (Document reference 6.1, DCO Volume 6) - assesses potential effects on health that may be affected by changes in air quality.
4. ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6) - provides an assessment of the traffic impacts resulting from the Proposed Development, that are considered in the air quality assessment to evaluate the effects of the Proposed Development on air quality.
5. ES Chapter 20 Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6) - provides an assessment of the cumulative effects, i.e. effects from the interrelationship between the Proposed Development and other developments, and an assessment of the in-combination effects, i.e. effects from the interaction between the individual effects of the Proposed Development.

~~6.1.7~~6.1.8 This chapter is supported and informed by the following appendices, all contained in ES Volume II (Document reference 6.2, DCO Volume 6):

1. ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology
2. ES Appendix 6.2 Air quality assessment traffic data
3. ES Appendix 6.3 Air dispersion model verification
4. ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads
5. ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transects results – nitrogen oxides
6. ES Appendix 6.6 Construction road vehicle exhaust emissions assessment – ecological features transects results – ammonia
7. ES Appendix 6.7 Construction road vehicle exhaust emissions assessment – ecological features transects results – nitrogen deposition
8. ES Appendix 6.8 Construction road vehicle exhaust emissions assessment – ecological features transects results – acid deposition

6.2 Legislation, policy and guidance

6.2.1 This section identifies the legislation, policy, guidance and other documentation that has informed the assessment of likely significant effects on air quality and odour.

Legislation

6.2.2 Table 6-1 lists the legislation relevant to the assessment of the likely significant effects on air quality and odour.

Table 6-1 List of relevant legislation

Legislation	Relevance to assessment
The Environment Act 1995 [1]	The Environment Act 1995 and its subsequent amendments address a broad spectrum of environmental matters. The Act encompasses pollution control and outlines the duties of the governing bodies in the United Kingdom responsible for enforcing environmental legislation. Under Part IV of the Environment Act 1995, local planning authorities are obligated to conduct periodic assessments of air quality within their respective jurisdictions. This process, known as Local Air Quality Management (LAQM), plays a crucial role in achieving the Government's air quality objectives (AQOs). The LAQM Technical Guidance provides guidance on how air quality should be assessed, where the AQOs should apply and provides the method for dispersion model verification. Those which are relevant to the air quality assessment for the Proposed Development are summarised in Table 6-6~~Table 6-6~~.
Air Quality (England) Regulations 2000 [2] and Air Quality (England) (Amendment) Regulations 2002 [3]	These regulations set legal standards and procedures for air quality management in England. They prescribe AQOs, monitoring, local management, and public information requirements. These regulations are central to air quality assessments, guiding compliance monitoring and pollution reduction strategies. The impact of the Proposed Development on local air quality is assessed against the AQOs established in the regulations and subsequent amendments. Table 6-6~~Table 6-6~~ presents the pertinent AQOs for this assessment.
Air Quality Standards Regulations 2010 [4]	These standards regulations set legal pollutant concentration limits, ensuring compliance, and enabling monitoring and action plans for public health and environmental protection. The Air Quality Standards (AQS) Regulations set limit values for specific pollutants over various averaging periods. These limits are designed to protect human health and cover pollutants such as sulphur dioxide (SO_2), nitrogen dioxide (NO_2), benzene, carbon monoxide (CO), and lead. In addition to the limit values, target values have been established for the concentration of $PM_{2.5}$. The regulations also include a limit value for $PM_{2.5}$ concentration. All limit values specified in these Regulations must not be exceeded. The Air Quality Standards Regulations serve to transpose the European Directive 2008/50/EC (as amended) into UK law. Table 6-6~~Table 6-6~~ presents the pertinent AQOs considered in this assessment.
Environmental Permitting (England and Wales) Regulations 2016 [5]	These regulations govern the permitting and control of industrial activities that have the potential to impact air quality. These regulations require the Operator of a facility to obtain permits and comply with emission limits and conditions.
The Environment Act 2021 [6]	The Act, consisting of eight parts, addresses various environmental matters, including air quality. Under the Act, the Secretary of State is obligated to establish Regulations that set a target for the annual

Legislation	Relevance to assessment
	level of $PM_{2.5}$. Defra's Interim $PM_{2.5}$ Guidance [7] supports the implementation of the Environment Act 2021 duty to set targets for fine particulate matter in the planning system. While non-statutory, it represents current Government policy and is a material consideration in decision-making. Originally, Section 4(9) required draft Regulations to be presented to Parliament by October 31, 2022, but this deadline was postponed. Furthermore, the Environment Act 2021 includes modifications to Part 4 of the Environment Act 1995 with relation to local air quality management. The impact of the Proposed Development on local air quality is assessed against the relevant air quality standard for $PM_{2.5}$, which is presented in Table 6-6~~Table 6-6~~.
The Environmental Targets (Fine Particulate Matter) Regulations 2023 [8]	On January 30, 2023, new regulations were introduced setting targets for $PM_{2.5}$ concentrations, as mandated by the Environment Act 2021. These regulations establish two key targets: "*The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10µg/m³ ("the target level")* *The population exposure reduction target is that there is at least a 35% reduction in population exposure by the end of 31st December 2040 ("the target date"), as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018 ("the baseline period"), determined in accordance with regulation 8".* The impact of the Proposed Development on local air quality is assessed against the relevant air quality standard for $PM_{2.5}$, which is presented in Table 6-6~~Table 6-6~~.

National policy

6.2.3 The primary policy for determining the application for the Development Consent Order (DCO) for the Proposed Development is the National Policy Statement for water resources infrastructure (NPSWRI). This sets out policies to guide how DCO applications for water resources infrastructure should be decided and how the effects of such infrastructure are considered.

6.2.4 Table 6-2~~Table 6-2~~ lists the paragraphs from the NPSWRI and other national policy that are relevant to the air quality and odour assessment. It also sets out where these policy requirements are addressed within the chapter.

Table 6-2 List of relevant national policy

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
National Policy Statement for water resources infrastructure (2025) [9]		
3.8.1, 3.8.6, 3.8.8	Environmental Regulation – These paragraphs set out how the Applicant should consult with relevant consenting authorities, for example the	Engagement with the EA and Natural England (NE), and other relevant stakeholders, has been undertaken for the

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
	Environment Agency (EA), to discuss the requirements needed for construction and operational activities. Requirements may include the need for environmental permits to be applied for as well as a demonstration that all relevant environmental impacts have been assessed. The Secretary of State should be satisfied that the development consent can be granted taking into full account of environmental impacts in close cooperation with the relevant authority.	purposes of air quality with regard to the Environmental Impact Assessment (EIA) and environmental permitting. Engagement undertaken to date is discussed in section 6.3.
3.12.1	NPSWRI Section 3.12 addresses health concerns related to the construction and use of water resources infrastructure, including impacts on air quality and emissions, dust and odour.	The assessment of likely significant effects on air quality, dust, and odour and is set out in section 6.8.
4.2.1 to 4.2.4 to 4.2.14	NPSWRI Section 4.2 addresses air quality concerns in water projects, highlighting potential harm to health, wildlife, habitats and the environment. It references UK laws, pollution reduction commitments, and air quality enhancement strategies. Applicants must assess air quality effects in the ES and implement mitigation measures. The Secretary of State should ensure mitigation and compliance with AQOs; development approval may be denied if it breaches air quality standards or emission reduction targets or is assessed as likely to hinder achievement of statutory emission and concentration targets.	The assessment of likely significant effects associated with the Proposed Development is set out in section 6.8. Details of design, mitigation and monitoring are summarised in sections 6.4 and 6.9. The chapter is supported by ES Appendices 6.1 to 6.8, all contained within Volume II (Document reference 6.2, DCO Volume 6).
4.2.5	NPSWRI paragraph 4.2.5 details that the ES should describe: • Existing (background) and baseline air quality levels • Any significant air quality effects, associated with the development (both alone and in-combination), their mitigation and any relevant residual effects distinguishing between the project stages, and taking account of any significant	The requirements of the NPSWRI paragraph 4.2.5 is addressed throughout the chapter.

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
	emissions from any traffic generated by the project • the contribution of emissions to air, to site-specific Critical Levels and Loads, for the protection of vegetation and ecosystems after mitigation methods have been applied • how the scheme has been designed so as to prevent air pollutant emissions • the contribution of emissions to ambient air quality after mitigation methods have been applied	
National Planning Policy Framework (2024) [10]		
199	Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and Green Infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.	The assessment of likely significant effects associated with the Proposed Development is set out in section 6.8, including screening of road traffic emissions in relation to AQMAs. Section 6.7 includes Consideration of AQMAs. Details of design, mitigation and monitoring are summarised in sections 6.4 and 6.9. The chapter is supported by ES Appendices 6.1 to 6.8, all contained within Volume II (Document reference 6.2, DCO Volume 6).
Clean Air Strategy 2019 [11]		
Chapter 2 Protecting the nation's health	Protecting the nation's health: In the UK, air quality presents a significant health concern, particularly due to particulate matter (PM) pollution. It impacts health both in the short-term and with prolonged exposure. Ambitious targets aligned with World Health Organisation (WHO) guidelines aim to reduce $PM_{2.5}$ exposure, with a 50% reduction in people living in areas	The assessment of likely significant effects associated with the Proposed Development is set out in section 6.8 in line with the AQOs summarised in Table 6-6~~Table 6-6~~.

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
	exceeding 10µg m^{-3} by 2025. The strategy includes personalised air quality messaging, local empowerment, media collaboration, and public education on PM pollution reduction. These efforts are consistent with broader health initiatives, including healthcare professional training and cooperation with local planning authorities to enhance air quality. The Strategy sets out the actions to reduce air pollution and the role of local planning authorities. Therefore, local planning authorities should have regard to this strategy when considering the health impacts from construction activities.	
Chapter 3 Protecting the environment	Chapter 3 of the Clean Air Strategy 2019 details the need for clean air and the effects on the environment. The Strategy notes $PM_{2.5}$ and PM_{10} resulting from vehicles as a source, and NOx from vehicles and combustion. The Strategy also notes targets for the reduction of nitrogen deposition and the monitoring of air pollution on natural habitats.	The assessment of likely significant effects of particulate matter is set out within section 6.8 in line with the AQOs summarised in Table 6-6~~Table 6-6~~. ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6), considers the impacts of air pollution on natural habitats.
Chapter 8 Actions to reduce emissions from the industry	Chapter 8 of the Clean Air Strategy 2019 details the generation of emissions from industrial processes. The Strategy also notes that actions to tackle emissions include tightening emissions standards from medium combustion plants and generators.	The assessment of likely significant effects considers emissions related to the construction and decommissioning of the Proposed Development and are described in section 6.8. Emissions from industrial processes are considered in section 6.8, where relevant.

Table 6-3 List of relevant national strategies

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
The Air Quality Strategy - Framework for local authority delivery (2023) [12]		
The Air Quality Strategy	The Air Quality Strategy outlines a set of objectives and policy options designed to	The assessment of likely significant effects

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
	continuously improve air quality in the United Kingdom, both in the present and the long-term. The Strategy is aimed at local planning authorities and sets out their powers and responsibilities expected by the UK Government. These measures aim to provide direct benefits to public health while also enhancing overall quality of life and contributing to the protection of the environment. The Air Quality Strategy defines the AQOs for different pollutants.	associated with the Proposed Development is set out in section 6.8 in line with the AQOs summarised in Table 6-6~~Table 6-6~~.
The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) [13]		
The Air Quality (England) Strategy England, Scotland, Wales and Northern Ireland	The Environment Act 1995 mandated the adoption of an Air Quality Strategy, which includes standards, objectives, and measures to enhance ambient air quality. Although not a legislative document, the Air Quality Strategy fulfils the requirements set out in the Environment Act 1995 and supersedes the previous strategy from 2000. The Strategy outlines the UK Government's policy related to air quality, objectives and measures for England, Scotland, Wales and Northern Ireland. It establishes a framework for improving air quality at both national and local levels, imposing obligations on local planning authorities to manage air quality effectively. At the core of the Air Quality Strategy are health-based criteria for specific air pollutants, which are derived from medical and scientific reports on the effects and concentrations at which each pollutant impacts human health. These criteria are in line with the AQOs established in the Air Quality (England) Regulations 2000. The AQOs are policy targets often defined as maximum ambient concentrations that should not be exceeded, either without exception or with a limited number of permitted exceedances, over a specified averaging period.	The assessment of likely significant effects associated with the Proposed Development is set out in section 6.8 in line with the AQOs summarised in Table 6-6~~Table 6-6~~.

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
Environmental Improvement Plan 2025 [14]		
Environmental Improvement Plan 2025	On 1 December 2025, the Government published a revised Environmental Improvement Plan (the Plan), which supersedes the 2023 Plan and represents the latest statutory update to the Government's 25 Year Environment Plan, to align with the requirements set forth in the Environment Act 2021 (see Table 6-1). The Environmental Improvement Plan establishes a framework for improving environmental quality in England and sets out a series of goals, commitments and interim targets. Goal 2: Air focuses on achieving long-term improvements in air quality to protect human health and the natural environment. Key policy objectives include: • Reducing overall air pollution by tackling emissions at source, including from transport, industrial activities, domestic combustion and agriculture • Delivering the statutory ambient air quality targets and emissions reduction commitments, including interim and long-term targets for $PM_{2.5}$ and other key pollutants • Reducing ammonia emissions, particularly to protect sensitive natural habitats, through regulatory measures and incentives within agricultural land-management schemes • Supporting coordinated national and local action to address areas of poor air quality, supported by monitoring, guidance and reporting mechanisms. The Environmental Improvement Plan solidifies the legally binding target to achieve a 35% reduction in population exposure to $PM_{2.5}$ by 2040, compared to 2018 levels. Additionally, it introduces a new interim target of a 30% reduction by December 2030. Furthermore, the Plan establishes a legal target requiring the annual mean concentration of $PM_{2.5}$ must not exceed	The assessment of likely significant effects associated with the Proposed Development is set out in section 6.8 with consideration for the emissions reduction targets described in the Environmental Improvement Plan. The assessment of likely significant effects associated with the Proposed Development is set out in section 6.8 in line with the AQOs summarised in Table 6-6~~Table 6-6~~.

Relevant paragraph reference	Summary of policy requirement	Where addressed in chapter
	10µg/m^3 by 2040, along with a new interim target of 10 µg/m^3 to be met by December 2030. Emission reduction targets for five pollutants by 2030 relative to 2005 levels: • Nitrogen oxides: 73% reduction • Sulphur dioxide: 88% reduction • $PM_{2.5}$: 46% reduction • Ammonia: 16% reduction • Non-methane volatile organic compounds: 39% reduction	

Local policy

6.2.5 The local policies listed in Table 6-4 are considered relevant to the air quality and odour assessment of the Proposed Development. While the Secretary of State (SoS) is required to determine an application for the development consent in accordance with the NPSWRI, it may be that the SoS considers aspects of local policy to be matters that are important and of relevance to the determination. In the event that there is any conflict between the local policy and the NPSWRI, the NPSWRI would prevail for the purposes of decision making given the national significance of the infrastructure.

6.2.6 Adopted and emerging development plan policies have been considered. Adopted and emerging planning policy that are relevant are included in Table 6-4.

Table 6-4 List of relevant local policy

Local planning authority	Relevant local policy	Relevance to assessment
East Hampshire District Council (EHDC)	East Hampshire District Local Plan: Joint Core Strategy [15] (Adopted May 2014) • CP27 Pollution	CP27 states that development must not result in pollution which prejudices the health and safety of communities and their environments and should be appropriately separated and designed to remove the risk of unacceptable impacts. The policy states that developments which may lead to likely significant effects on designated sites are required to undertake an appropriate assessment, and as part of any mitigation/avoidance package any impacts on air quality will require a regime for continued air quality monitoring. The impact of the Proposed Development on receptors susceptible to air pollutants has been undertaken in order to quantify air quality impacts on sensitive human and ecological receptors, therefore allowing an assessment of

Local planning authority	Relevant local policy	Relevance to assessment
		risk and the identification and implementation of appropriate mitigation, in line with this local plan. The receptors considered within the air quality assessment are detailed in section 6.7. The results of the assessment are considered in section 6.8. The assessment of likely significant effects of air quality on ecological receptors and health receptors are considered in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6) and ES Chapter 17 Socio-economics, tourism and health, Volume I (Document reference 6.1, DCO Volume 6) respectively. The requirement for the development to be appropriately designed to reduce the risk of unacceptable impacts has fed into the Design Principles Document (Document reference 5.11, DCO Volume 5) and is presented in section 3.1 within ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6).
	East Hampshire District Council Our Local Plan 2021 – 2040 Regulation 18 [16] (Emerging Local Plan January 2024) • Policy DM13 Air quality	DM13 states that design principles of developments should reduce impacts on local air quality, and that major developments that would contribute to traffic should produce an Air Quality Assessment, with proposals demonstrating steps to reduce emissions. Mitigation measures to reduce emissions are considered in sections 6.4 and 6.9. Primary measures included as part of the Proposed Development design are presented in the Design Principles Document (Document reference 5.11, DCO Volume 5). The assessment presented in this chapter assesses any potential air quality impacts of traffic on air quality and identifies appropriate mitigation. Likely significant effects related to traffic resulting from the Proposed Development are assessed in ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).
Eastleigh Borough Council (EBC)	Eastleigh Borough Local Plan (2016-2036) [17] (Adopted April 2022)	Policy DM8, Pollution, outlines strict regulations to protect public health and the environment. It prohibits development that may cause amenity loss, public health issues, or environmental harm due to air pollution (including odours or

Local planning authority	Relevant local policy	Relevance to assessment
	• Policy DM8, Pollution	particulate emissions). Development sensitive to pollution is only allowed if effective mitigation measures are in place or if it does not hinder existing activities with acceptable pollution levels. The impact of the Proposed Development on receptors susceptible to air pollutants as stated in Policy DM8 has been assessed and the results considered in section 6.8. The impact of the Proposed Development to employment, recreation and character are considered throughout the ES in ES Chapter 12 Land use and agriculture, ES Chapter 17 Socio-economics, tourism and health, ES Chapter 13 Landscape and visual, ES Chapter 7 Archaeology and cultural heritage and ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6). Policy DM8 states that adequate mitigation measures should be undertaken, details of which are summarised in sections 6.4 and 6.9.
Fareham Borough Council (FBC)	Fareham Local Plan 2037 [18] (Adopted April 2023) • Policy NE8: Air Quality	Policy NE8 sets strict standards for development to protect air quality. Development in areas with poor air quality is allowed if it will not harm occupants or visitors. A development should consider the following useful guiding principles: adhering to good design principles, reducing transport-related air quality impacts, and having regard to the Council's Air Quality Action Plan and AQMAs where relevant. The policy also notes the role of major developments in the improvement of local air quality through the delivery and/or enhancement of Green Infrastructure. Mitigation is considered in sections 6.4 and 6.9 of this chapter in line with the outcomes of the assessment, which takes into consideration transport related emissions and AQMAs. Supporting documents including a Framework Construction Traffic Management Plan (CTMP) (Document reference 7.2, DCO Volume 7) and Framework Construction Worker Travel Plan (CWTP) (appended to the Framework CTMP (Document reference 7.2, DCO Volume 7)), which set out how construction activities will be

Local planning authority	Relevant local policy	Relevance to assessment
		managed to reduce the impact of construction road traffic associated with the Proposed Development.
	Local Plan Part 3: The Welborne Plan [19] (Adopted June 2015) • WEL3 Allocation of Land • WEL6 General Design Principles	The land within the Welborne Plan is not subject to the air quality policy under the general Fareham Local Plan set out above. The Welborne Plan instead states that issues relating to air quality are to be considered in developing proposals and shall set out the measures necessary to mitigate any likely impacts. Policy WEL3 allocates land for the community of Welbourne, delivering dwellings, a community hub and a secondary school. Policy WEL6 notes that development proposals for Welbourne should demonstrate the consideration of pollution, including air quality and necessary mitigation measures. The impact of the proposals within WEL3 have been considered cumulatively with the Proposed Development. The results are considered in section 6.8.
Havant Borough Council (HBC)	Havant Borough Core Strategy [20] (Adopted March 2011) • DM10 – Pollution • DM12 – Mitigating the Impacts of Travel • CS16 – High Quality Design	Policy DM10 specifies that development should not breach national air quality standards or objectives and ensure the health and safety of existing and future users of a site, or nearby occupiers and residents is not put at risk. Policy DM12 states that new developments should address their travel-related impacts, including air pollution. Policy CS16 provides that planning permission will be granted to high-quality developments that respond to local context, integrate with the environment, promote positive relationships between buildings and spaces, improve public realms, ensure inclusivity and accessibility, encourage mixed-use and higher densities, mitigate environmental impacts, and adapt to changing needs and climate. The national air quality standards noted in Policy DM10 are highlighted in Table 6-6~~Table 6-6~~ and are assessed against in this assessment. The impact of the Proposed Development on

Local planning authority	Relevant local policy	Relevance to assessment
		receptors susceptible to air pollutants has been assessed with regard to this local plan, the results of which are considered in section 6.8. The submission of a transport assessment to consider the impacts of travel per Policy DM12 is submitted as ES Appendix 18.1 Transport Assessment, Volume II (Document reference 6.2, DCO Volume 6). A Framework CTMP (Document reference 7.2, DCO Volume 7) and Framework CWTP (appended to the Framework CTMP (Document reference 72. DCO Volume 7) is submitted as part of the DCO application to manage the potential impacts of construction road traffic associated with the Proposed Development, and therefore also manage potential air quality impacts. Policy CS16 considers the need for mitigating environmental impacts through sustainable design and construction methods, with air-quality related mitigation for the Proposed Development summarised in sections 6.4 and 6.9.
	Havant Borough Local Plan (Allocations) [21] (Adopted July 2014) • DM18 – Protecting New Development from Pollution	Policy DM18 states that the projected levels of air and other pollution should not have a significant effect on the amenity of users of the development. The air quality impacts of the Proposed Development on receptors, including effects on human health, has been assessed and the results considered in section 6.8. The impact of the Proposed Development to employment, recreation and human health are considered throughout the ES in ES Chapter 12 Land use and agriculture, Volume I (Document reference 6.1, DCO Volume 6).
	Building a Better Future [22] – (Emerging Local Plan)	Building a Better Future is an emerging Local Plan. The proposed policies, related to air pollution and odour, aim to protect residents and the natural environment from projected levels of odour and air pollution, and provide a mechanism to secure suitable mitigation, and a requirement for larger scale proposals to offset air quality emissions.

Local planning authority	Relevant local policy	Relevance to assessment
		Mitigation and monitoring for the Proposed Development is considered in sections 6.4 and 6.9. There are no current plans to offset emissions, only to mitigate as they are short-term during the construction period only (section 6.4).
Portsmouth City Council (PCC)	Portsmouth Plan (The Portsmouth Core Strategy) [23] (Adopted (Amended) January 2012) • PCS14: A healthy city	Policy PCS14 emphasises creating a healthy city by improving air quality in the city through implementing the Council's Air Quality and Air Pollution Supplementary Planning Document (SPD) and Air Quality Action Plan. The need to address health and wellbeing through design is considered in ES Chapter 17 Socio-economics, tourism and health, Volume I (Document reference 6.1, DCO Volume 6) and the assessment of impacts to receptors with regards to air pollutants is considered in section 6.8.
	Portsmouth City Council Pre-Submission Portsmouth Local Plan [24] (Emerging Local Plan July 2024) • PLP35: Air Quality and Pollution	The Pre-Submission Portsmouth Local Plan is undergoing consultation. Policy PLP35 emphasises that proposals should not contribute to unacceptable levels of pollution, including air quality, odour and dust, which cannot be mitigated. Health inequalities and wider determinants of health and wellbeing must be taken into account in the design of a proposal. Assessment of impacts to receptors with regards to air pollutants in relation to the air quality objectives is considered in section 6.8. The need to address health and wellbeing through design is considered in ES Chapter 17 Socio-economics, tourism and health, Volume I (Document reference 6.1, DCO Volume 6).
	Supplementary Planning Document (SPD) - Air Quality and Pollution [25] (Adopted March 2006)	This SPD supplements the policies in the Local Plan which are currently used to determine planning applications and contains the requirements for air quality assessments undertaken to support planning applications. The impact of the Proposed Development on receptors susceptible to air pollutants and odour has been assessed in accordance with the requirements of this SPD and the results considered in section 6.8. Details of design,

Local planning authority	Relevant local policy	Relevance to assessment
		mitigation and monitoring are summarised in sections 6.4 and 6.9.
	Milton Neighbourhood Development Plan Adopted Version 2021-2036 (Adopted October 2022)	Policy TSP1 notes that traffic generated by developments should demonstrate that there is no significant detrimental impact to air quality. The assessment presented in this chapter assesses any potential air quality impacts of traffic and identifies appropriate mitigation. Likely significant effects related to traffic resulting from the Proposed Development are assessed in ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).
Winchester City Council (WCC)	Winchester District Local Plan Part 2 Development Management and Site Allocations [26] (Adopted April 2017) • Policy DM17 – Site Development Principles • Policy DM19 - Development and Pollution	Policy DM17 highlights that new developments should not cause unacceptable levels of pollution to neighbours, including through smell, dust or other pollution. Policy DM19 focuses on pollution, including air quality. It permits development complying with the Development Plan and meeting environmental quality standards. Proposals must follow national air quality standards and outline compliance in their design. The policy mandates addressing potential adverse air quality impacts, conducting assessments, and proposing mitigations for acceptable living conditions. The local planning authority can impose specific measures for pollution standards as a condition to a planning permission. The impact of the Proposed Development on receptors susceptible to air pollutants and odour has been assessed with regard to this Local Plan and in relation to national air quality standards and the results are presented in section 6.8. Details of design, mitigation and monitoring are summarised in sections 6.4 and 6.9.
	Air Quality Supplementary Planning Document [27] (Adopted December 2010)	The SPD supplements the policies in the Local Plan which are currently used to determine planning applications. The SPD sets out WCCs requirements for reducing air pollution emissions from new development on all land that is either in or within 1km of the Winchester settlement area.

Local planning authority	Relevant local policy	Relevance to assessment
		The impact of the Proposed Development on receptors susceptible to air pollutants and odour has been assessed with regard to this SPD and the results are considered in section 6.8. Details of design, mitigation and monitoring are summarised in sections 6.4 and 6.9.
	'Your Place Your Plan Winchester District Local Plan' 2020-2040. Local plan Regulation 19 Document for Consultation – Aug 2024 [28] • SP2 Spatial Strategy and Development Principles • D7: Development Standards	Policy SP2 includes the need for proposals to consider air quality impacts on the community. Policy D7 highlights the need for compliance with national standards and the inclusion of a statement confirming how these are met (section 6.2). It also calls for proportionate assessments where there is potential for adverse impacts on odour and air quality (see section 6.8). The impact of the Proposed Development on receptors susceptible to air pollutants and odour has been assessed with regard to this Local Plan and the results are considered in section 6.8. Details of design, mitigation and monitoring are summarised in sections 6.4 and 6.9. The assessment is proportionate to the scale of the Proposed Development and is covered in sufficient detail in accordance with national and industry guidance.
	South Downs Local Plan [29] (Adopted July 2019) • SD2: Ecosystem Services • Policy SD54: Pollution and Air Quality	Policy SD2 highlights that developments should have an overall positive impact on the natural environment and deliver opportunities to reduce levels of pollution. Policy SD54 addresses pollution and air quality. Development is allowed if it does not significantly harm air quality, considering cumulative effects and mitigation. For areas near existing AQMAs, developers must follow relevant Air Quality Action Plans, seeking air quality improvements and providing mitigation if an AQMA is affected. Mitigation is necessary if development could lead to a new or extended AQMA. Development is permitted when it follows good practice measures to reduce air pollution, including dust, during construction. The Proposed Development is not located within a National Park, or near an AQMA within the National Park. However, the impact of the Proposed Development on receptors susceptible to air pollutants has been assessed

Local planning authority	Relevant local policy	Relevance to assessment
		with regards to this Local Plan and the results are considered in section 6.8. Details of design, mitigation and monitoring are summarised in sections 6.4 and 6.9. The air quality assessment is inherently cumulative and considers potential cumulative impacts of emissions associated with other plans or projects (see paragraph 6.5.62) within section 6.8. Cumulative effects are considered in ES Chapter 20 Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6).

Guidance standards and advice

6.2.7 In addition, the air quality and odour assessment has been undertaken in accordance with relevant guidance and has been compiled in accordance with professional standards. The guidance and standards which relate to this assessment are detailed in Table 6-5.

Table 6-5 List of relevant guidance and standards

Guidance	Description	Relevance to assessment
Air Quality Planning Practice Guidance (2019) 001-008 [30]	The importance of air quality in planning decisions depends on the Proposed Development and its location. It is crucial when developments could worsen existing poor air quality, breach legal obligations, or affect sensitive areas. In such cases, authorities must assess: • Current air quality conditions and the impact of the development on air pollutants (such as NOx, PM_{10}, $PM_{2.5}$, NH_3) • How the Proposed Development could significantly change air quality during construction and operation • The potential impact on residents' health and living conditions due to poor air quality The Air Quality Planning Practice Guidance is highlighted in the National	This guidance outlines how planning decisions should consider air quality impacts, including traffic, pollution sources, and exposure risks. It also details the types of assessments and data planning authorities may require to evaluate health, amenity, and environmental effects.

Guidance	Description	Relevance to assessment
	Policy Statement for water resources infrastructure paragraph 4.2.1 as it provides details on the consideration and assessment of air quality issues.	
Defra (2024) $PM_{2.5}$ Targets: Interim Planning Guidance [7]	Provides interim planning guidance on addressing $PM_{2.5}$ emissions and exposure in support of the Environment Act 2021 targets.	This guidance has been used to inform the proportionate approach to assessing $PM_{2.5}$, including screening of construction and operational emissions and identification of embedded mitigation measures where relevant.
Environment Agency (2011) H4 Odour Management – how to comply with your environmental permit [31]	This guidance sets out how permit holders and potential permit holders can apply for, vary and comply with their permits.	This guidance has been taken into consideration in this assessment in relation to the potential sources of odour during operation of the Proposed Development.
Institute of Air Quality Management (IAQM) (2018) Guidance on the assessment of odour for planning [32]	This guidance sets out how to assess odour impacts for planning purposes.	This guidance was followed in this assessment due the presence of Budds Farm Wastewater Treatment Works (WTW) and sensitive receptors in the vicinity, as well as the landfill site that would be affected as part of the construction works.
Environment Agency and Department for Environment, Food & Rural Affairs (Defra) (2016, updated May 2024) Air emissions risk assessment for your environmental permit [33]	This provides guidance on assisting assessment of air quality effects for the Proposed Development.	This guidance has assisted in assessing air quality effects for the Proposed Development.
Department for Environment, Food & Rural Affairs (2022) Local Air Quality Management (LAQM) Technical Guidance (TG22) [34]	This guidance supports local planning authorities with the statutory process of monitoring, assessing and taking action to improve local air quality.	This guidance is relevant as it demonstrates the considerations of local planning authorities when consulting on a project such as the Proposed Development. It also provides guidance on the approach to take when undertaking road traffic model verification. This approach to model verification has been used in this assessment.
Institute of Air Quality Management (2024) Guidance on the Assessment of Dust	This guidance sets out how to assess the risk of impacts from dust during demolition,	This guidance provides a method to assess risks resulting from dust during construction activities (section 6.8). It has been followed in this assessment. The outcomes of

Guidance	Description	Relevance to assessment
from Demolition and Construction [35]	earthworks, construction and trackout activities.	the assessment have been used to inform mitigation measures commensurate to the assessed risk and are secured within the Outline Construction Environmental Management Plan (CEMP) (Document reference 7.1, DCO Volume 7).
Institute of Air Quality Management & Environmental Protection UK (IAQM & EPUK) (2017) Land-Use Planning & Development Control: Planning for Air Quality [36]	This guidance sets out how to ensure that air quality is considered in the land-use planning and development control process.	This guidance is relevant to all developments to incorporate good principles of design to reduce emissions and reduce impacts on local air quality. It provides a method/framework for undertaking an air quality assessment, which has been followed in this assessment.
Institute of Air Quality Management (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites [37]	This guidance highlights the importance of air quality and impacts of air quality on designated nature conservation sites	This guidance is relevant due to the proximity of the Proposed Development to designated sites. It has been followed, where relevant, in this assessment.
National Highways (NH) (2024) Design Manual for Roads and Bridges (DMRB) LA105: Air quality [38]	This document sets out the requirements for assessing and reporting the effects of road traffic emissions and impacts on air quality.	This guidance is relevant due to the road transportation requirements during the construction, operation and decommissioning phases of the Proposed Development. It has been used for some aspects of traffic screening and road traffic emissions dispersion modelling methodology as detailed in section 6.5.
Natural England (2018) Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations [39]	This guidance sets out Natural England's approach to assessing the effects of road traffic emissions.	This guidance is relevant due to the proximity of the Proposed Development to designated sites and the emissions from road traffic generated by the Proposed Development during the construction, operation and decommissioning phases. It has been followed, where relevant, in this assessment.

6.2.8 The policy, legislation and guidance above note the relevant pollutants of concern and requirements of the air quality assessment for the Proposed Development. The pollutants of concern in the context of the air quality assessment in relation to human health are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) which may exceed the air quality objectives in locations of 'relevant exposure', i.e. where members of the public are exposed for periods equal to or exceeding the

averaging periods set for the standards. For this assessment, in accordance with the IAQM and EPUK guidance [36] and LAQM.TG(22) guidance [34], locations of relevant exposure include building facades of residential properties, schools, care homes and medical facilities. Air quality objectives relevant to the air quality assessment, as set out in the Air Quality Regulations, are summarised in Table 6-6~~Table 6-6~~.

Table 6-6 Air quality objectives (England) for the purpose of local air quality management in relation to human health

Pollutant	Air quality objective		To be achieved by
	Concentration (µg.m^{-3})	Measured as*	
NO_2	200	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40	Annual mean	31/12/2005
Particles (PM_{10})	50	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40	Annual mean	31/12/2004
Particles ($PM_{2.5}$)	20	Annual mean	01/01/2020
	10**	Annual mean (target)	31/12/2040**
	15% cut in annual mean (urban background exposure)	Annual mean	2010-2020
	35%** cut in annual mean (urban background exposure)	Annual mean	31/12/2040
The way the objectives are to be measured as set out in the UK Air Quality (England) Regulations 2000* * New environmental targets required by the Environmental Targets (Fine Particulate Matter) Regulations 2023*			

6.2.9 There is no statutory guidance relevant to odour releases from unregulated sites (where emissions of odour are likely to be indeterminable and/or fugitive in nature), those that are exempt from the Environmental Permitting Regulations, or as to what constitutes a statutory nuisance. Non-statutory guidance has been published by several professional and industrial bodies with assessments conducted in the UK following an approach of custom and practice based on case-law precedent. Therefore, any likely significant effects arising from odour emissions from the Proposed Development are determined in line with the guidance provided by the IAQM [32] together with guidance contained in the EA H4 Odour Management 2011 [31].

6.3 Consultation, scoping and engagement

Consultation

6.3.1 Feedback received from stakeholders for each consultation relevant to air quality and odour is summarised within the Consultation Report (Document reference 5.1. DCO Volume 5) including how the Proposed Development has had regard to the feedback. These cover the consultation responses received for the following consultations:

1. Summer 2022 Consultation
2. Summer 2024 Consultation
3. Spring 2025 Consultation
4. Autumn 2025 Consultation
5. Spring 2026 Consultation

Environmental Impact Assessment scoping

6.3.2 An Environmental Impact Assessment (EIA) Scoping Opinion was adopted by the Planning Inspectorate on behalf of the Secretary of State on 31 August 2023. A full list of the EIA Scoping Opinion comments made by the Planning Inspectorate and a response to those comments are provided in ES Appendix 5.3 Response to EIA Scoping Opinion, Volume II (Document reference 6.2, DCO Volume 6).

6.3.3 Comments received in relation to air quality and odour are set out in Table 6-7, describing how and where these are addressed in the ES.

Table 6-7 Environmental Impact Assessment Scoping Opinion - Planning Inspectorate comments

EIA Scoping Opinion ID	Summary of EIA Scoping Opinion comment	How the ES addresses the EIA Scoping Opinion comment	Where addressed in the ES
ID 3.1.1	The EIA Scoping Opinion stated that the ES should provide an assessment of impacts from odour emissions to human receptors during the construction phase of the Water Recycling Plant (WRP) site, due to a potential impact pathway from excavating an historic landfill, or should demonstrate that no likely significant effects would occur and agreement from the relevant consultation bodies. The EIA Scoping Opinion agreed that effects on ecological receptors from odour emissions could be scoped out of the assessment. The EIA Scoping Opinion also stated that mitigation that is relied upon should be secured through the DCO.	In relation to impacts from odour emissions to human receptors during the construction phase of the WRP in the EIA Scoping Opinion ID 3.1.1, a qualitative assessment has been conducted to evaluate the potential for odour impacts on human receptors from the historic landfill site that would be affected at the WRP site. In line with the comment on mitigation within the EIA Scoping Opinion 3.1.1, the securing mechanism for all mitigation is set out in the ES Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).	A qualitative assessment of potential odour impacts during the construction phase of the WRP site is presented in section 6.8. The Commitments Register is provided in ES Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).
ID 3.1.2	The EIA Scoping Opinion agreed to scope out impacts from dust and particulate matter during	These topics have been scoped out of the assessment.	No additional information provided in the ES.

EIA Scoping Opinion ID	Summary of EIA Scoping Opinion comment	How the ES addresses the EIA Scoping Opinion comment	Where addressed in the ES
	operation on human and ecological receptors.		
ID 3.1.3	The EIA Scoping Opinion agreed to scope out the potential impacts of road traffic emissions on humans and ecological receptors during operation based on the changes in traffic flows from the Proposed Development, subject to reference being made to Natural England's guidance relating to assessment of road traffic emissions under the Habitats Regulations, NEA001, and consideration being given to the implications of restrictions during the Covid-19 pandemic in determining the annual average daily traffic. The EIA Scoping Opinion stated that the ES should also demonstrate that cumulative vehicle movements with other developments would not exceed the IAQM thresholds based on worst case assessments, or else an assessment should be provided.	This ES contains information relating to operational phase road traffic movements associated with staff, maintenance, servicing and deliveries. The approach to assessment of ecological features is in-line with NEA001 [39] instead of using Joint Nature Conservation Committee (JNCC) thresholds. Furthermore, as described in section 6.5, traffic data is derived from a post COVID pandemic year (2023). Paragraph 6.8.80 provides detail on consideration of operational phase cumulative vehicle movements.	See paragraph 6.8.78 to paragraph 6.8.80 for consideration of operational phase road traffic movements.
ID 3.1.4	The EIA Scoping Opinion agreed to scope out the potential impacts on humans and ecological receptors from NRMM and machinery emissions during operation subject to the ES demonstrating why likely significant effects are not likely to occur, with agreement from relevant consultation bodies that the matter can be scoped out of the assessment. The EIA Scoping Opinion also stated that the ES should	The Applicant sought agreement from local planning authorities on scoping out this matter at the Emissions and Transport EIA Working Group session 4 on 03 November 2023. No concerns were raised regarding this during the Emissions and Transport EIA Working Group session 4. This ES assesses the potential impacts of emissions and details the likely frequency and	Information on operational phase NRMM and plant is presented in paragraph 6.8.82 to paragraph 6.8.85

EIA Scoping Opinion ID	Summary of EIA Scoping Opinion comment	How the ES addresses the EIA Scoping Opinion comment	Where addressed in the ES
	detail the likely frequency and duration of emergency generator use, the required number of generators, and their locations.	duration of emergency generator use, the required number of generators, and their locations.	
ID 3.1.5	The EIA Scoping Opinion agreed to scope out the potential impacts of odour emissions on human and ecological receptors during operation subject to the ES providing details of the surveys undertaken at other sites, along with confirmation of any records of odour complaints from the existing operation.	Operations at Budds Farm WTW would remain unchanged. The Water Recycling Plant (WRP) site utilises the wastewater from the existing treatment process (final effluent). The wastewater, which is of secondary treated quality, has minimal odour potential and resembles river water more than wastewater. Typically, secondary treated wastewater processes do not necessitate detailed odour assessments due to their low emissions as it would have already been extensively cleaned and treated at Budds Farm WTW. The WRP site would not introduce any additional odour impacts during its operational phase. Additionally, confirmation from HBC regarding the absence of recent actionable odour-related complaints, along with no complaints received by the Applicant and one complaint received by HBC in the past year, highlights the rarity of odour issues at Budds Farm WTW. Given that the Proposed Development does not involve modifications to the potentially odorous components of Budds Farm	Paragraph 6.8.86 to paragraph 6.8.88.

EIA Scoping Opinion ID	Summary of EIA Scoping Opinion comment	How the ES addresses the EIA Scoping Opinion comment	Where addressed in the ES
		WTW and utilises wastewater with minimal odour potential, it is not expected to contribute to any odour-related issues during its operation. Therefore, separate odour assessments for the operational phase of the WRP site are not deemed necessary.	
ID 3.1.6	The EIA Scoping Opinion noted that reference should be made to Natural England's guidance relating to assessment of road traffic emissions under the Habitats Regulations when determining whether identified European sites should be assessed for air quality impacts.	The assessment of construction road traffic emissions on ecological receptors has been undertaken in accordance with Natural England's guidance.	Section 6.5 and section 6.8.
ID 3.1.7	The EIA Scoping Opinion agreed to the use of local planning authority monitoring data, Defra background mapping and modelling to establish the baseline air quality conditions, along with confirmation on the approach taken to the use of any baseline data affected by restrictions during the Covid-19 pandemic. The EIA Scoping Opinion also stated that data available from Air Pollution Information System (APIS) in respect of background air quality at designated nature sites should be considered in the assessment with regard to baseline data collection.	It is confirmed that the use of local monitoring data, Defra background mapping and modelling data (post-Covid-19 pandemic restrictions) is incorporated into the assessment. Baseline local monitoring data collected during the Covid-19 pandemic restrictions is presented and is not used in the assessment of impacts. APIS background data is used in respect of background air quality at designated ecological features in the assessment.	Section 6.7 and section 6.8.
ID 3.1.8	The EIA Scoping Opinion suggested the	Following consultation with Natural England, the	Section 6.8.

EIA Scoping Opinion ID	Summary of EIA Scoping Opinion comment	How the ES addresses the EIA Scoping Opinion comment	Where addressed in the ES
	consideration of implications of the Covid-19 pandemic when determining the annual average daily traffic threshold when applying the JNCC criteria of a 0.15% increase or more.	approach to assessment of ecological features is in-line with NEA001 [39] instead of using JNCC thresholds. Furthermore, as described in section 6.5, traffic data is derived from a post pandemic year (2023).	
ID 3.1.9	The EIA Scoping Opinion suggested the inclusion of a figure to identify the final study areas for the air quality assessment, including the locations of human and ecological receptors	Relevant figures to present the final study areas for the air quality assessment have been produced.	The relevant air quality study areas for each element of the assessment are provided in ES Figure 6.1 to ES Figure 6.4, Volume III (Document reference 6.3, DCO Volume 6).

Engagement

6.3.4 This section provides details of the ongoing technical engagement that has been undertaken with stakeholders in relation to air quality and odour.

Environmental Impact Assessment working groups

6.3.5 Five EIA Working Groups have been established as forums for ongoing engagement with statutory bodies regarding the Proposed Development. These Working Groups when combined cover all of the assessment topics considered by the EIA. A full description of each of the EIA Working Groups, the key stakeholders, and an overview of the topics presented can be found in ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6). This section presents a summary of the topics covered in the EIA Working Groups which are of relevance for the air quality and odour assessment.

6.3.6 The Emissions and Transport EIA Working Group, which includes air quality and odour, resources and waste management, traffic and transport, noise and vibration, and carbon and greenhouse gases, has been the main forum for engagement for air quality and odour. There have been 12 Emissions and Transport EIA Working Group meetings between Summer 2022 and the DCO application. Technical officers from EBC, EHDC, FBC, HBC, Hampshire County Council (HCC), PCC, WCC, SDNPA, the EA, NE, and National Highways attended the EIA Working Group meetings.

6.3.7 The following overarching themes were covered across the EIA Working Group meetings:

1. Introduction and background to the Proposed Development.
2. Overview of the baseline environment.

3. EIA scoping which included setting out the proposed approach to EIA scoping, providing an overview of the EIA Scoping Report and seeking feedback on the EIA Scoping Opinion.
4. An overview of the PEI Report, including setting out the baseline and approach to mitigation, as well as providing an overview of the PEI Report findings.
5. Updates on the approach to development of the design of the Proposed Development.
6. Briefings on the materials to be consulted on, including design and environmental assessment related matters, ahead of the Summer 2022, Summer 2024 and Spring 2025 Consultations.
7. Approach to mitigation, Commitments Register and associated management plans to be provided with the DCO application.
8. Consultation feedback and updates on scheme development, and design principles following the Summer 2024 Consultation and PEI Report.
9. Updates on EIA progress and development of mitigation, including management plans and the Commitments Register.
10. An overview of the ES, including setting out the baseline and any updates from the PEI Report, as well as providing an overview of the findings of the EIA.

6.3.8 More specific items have been agreed through the EIA Working Group meetings as follows:

1. It was agreed at Session 4 (3 November 2023) that impacts on human and ecological receptors from dust and particulate matter during operation could be scoped out.
2. It was agreed at Session 4 (3 November 2023) that impacts on human and ecological receptors from road traffic emissions during operation could be scoped out.
3. It was agreed in Session 4 (3 November 2023) that backup generators did not need to be assessed and that provision of details on backup generators was sufficient.
4. The approach to assessment of impacts on ecological receptors from road traffic emissions during construction was discussed at Session 7 (30 September 2024), following Summer 2024 Consultation responses from NE. This approach was discussed via email and agreed with NE (see section 6.5).
5. Scoping out the impacts was also discussed and agreed at the Emissions and Transport EIA Working Group meetings held on 14 June 2022, 9 September 2022, 8 June 2023, 3 November 2023 and 1 February 2024. The items scoped in and scoped out are presented in Table 6-8.
6. Scoping out the impacts of NRMM emissions during operation was raised in the Emissions and Transport EIA Working Group Session 4 on 3 November 2023. No concerns were raised during this meeting in regards NRMM emissions during operation.
7. It was agreed by the Planning Inspectorate at scoping that operational transport impacts could be scoped out and as such has not been considered within ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO

Volume 6). As such, a cumulative assessment of operational phase impacts (ID 3.1.3) would not be possible. This was discussed and agreed with relevant stakeholders during the EIA emissions and transport Session 10/11 on 16 September 2025 and is discussed in paragraphs 6.8.78 - 6.8.80.

6.3.9 Comments received as part of the EIA Working Groups and matters resolved in relation to air quality and odour included:

1. The provision of a summary of air quality study areas in Session 6 (9 May 2024) of the Community EIA Working Group. This was agreed in relation to but outside of Session 6 after the design freeze.

6.3.10 In addition to the Emissions and Transport EIA Working Group, Technical Working Groups were established for ongoing engagement with statutory bodies regarding the Proposed Development. During the EIA Technical Working Group on 13 February 2025 the approach to the assessment of in-combination (cumulative) effects was presented and discussed for ecological receptors. Following the session, a written response was provided to clarify questions raised during the session including justification for the 3km Zone of Influence buffer, an indication of what non-road sources have been excluded and included in the assessment, the approach to the Impact Risk Zones and the search terms used. The approaches detailed within the written response were agreed by Natural England on 28 April 2025.

6.4 Primary and tertiary mitigation

Primary measures

6.4.1 As described in ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6), a range of measures have been embedded into the Proposed Development design to avoid or reduce environmental effects. These primary mitigation measures specific to air quality and odour, which form part of the design that has been assessed are:

1. Preference for the shortest pipeline route to reduce the overall footprint and the number of receptors that would be affected.
2. Avoiding populated areas, where possible.
3. Avoiding designated nature conservation sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Ramsar sites), wherever possible. Where this is not possible, trenchless installation methods to be used for the Pipeline through these sites/areas. This approach avoids direct impacts to habitat features within the designated sites within the Order Limits of the Proposed Development.

Tertiary measures

6.4.2 Good construction practices are secured in the Outline CEMP (Document reference 7.1, DCO Volume 7) which is secured by a requirement in the DCO and will manage the effects during the construction phase. The measures of particular relevance to air quality and odour are:

1. Measures to mitigate risks to human health and ecological receptors during construction from potential dust and particulate matter emissions, by controlling and managing emissions at source.
2. Measures to mitigate risks to human health and ecological receptors during construction, from potential emissions from construction NRMM. For example, by siting NRMM away from receptor locations where reasonably practicable.
3. Measures to mitigate risks to human health during excavation of the landfill site, for construction of the WRP site from potential odour emissions. For example, timing of works when meteorological conditions are favourable, liaison with local residents, regular on-site sniff testing.
4. All road construction vehicles associated with moving materials will adhere to Ultra Low Emission Zone (for light duty vehicles (LDVs)) or Low Emission Zone (for heavy duty vehicles (HDVs))-equivalent emissions standards, i.e.:
   a. Petrol cars, vans and minibuses (vehicles less than 3.5 tonnes gross weight) should be Euro 4 (or better).
   b. Diesel cars, vans and minibuses (vehicles less than 3.5 tonnes gross weight) should be Euro 6 (or better)).
   c. HDVs (vehicles more than 3.5 tonnes gross weight) should be Euro VI (or better).

6.4.3 In line with the $PM_{2.5}$ Interim Planning Guidance, it is considered that the application of measures which are targeted specifically in relation to PM_{10} and dust soiling would also result in a consequential and beneficial reduction in $PM_{2.5}$ emissions and associated impacts during the construction phase.

6.4.4 Decommissioning will be subject to the appropriate permits, consents and regulatory environment at the relevant time. Decommissioning activities are expected to follow good industry practice in place at the time, anticipated to be similar in nature to measures contained in the Outline CEMP (Document reference 7.1, DCO Volume 7).

6.5 Assessment methodology

Scope of assessment

6.5.1 Likely significant effects requiring assessment may be temporary or permanent, direct, indirect, secondary, cumulative, in-combination, beneficial or adverse and may occur during construction, operation or decommissioning. Likely significant effects on air quality and odour receptors within the scope of the assessment are summarised in Table 6-8. The scope of the assessment has responded to feedback received as detailed in section 6.3.

6.5.2 Effects from decommissioning of the Proposed Development are considered to be no greater than those identified during the construction phase and are therefore assessed to be of the same significance as those assessed for construction effects. Where decommissioning activities differ from those assessed during construction, these activities are assumed to be undertaken following industry good practice and complying with the relevant statutory requirements and regulatory framework at the time. Decommissioning effects have been considered

within section 6.8. Please refer to ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6), section 3.7 for information on decommissioning.

6.5.3 Cumulative effects are those resulting from the interrelationship between the Proposed Development and other developments (inter-project). The air quality assessment utilises cumulative traffic data as a primary input (see section 6.5 and section 6.8) as well as considers effects from non-road sources (section 6.8). Therefore, the air quality assessment is inherently cumulative in nature. These are reported within ES Chapter 20 Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6).

6.5.4 In-combination effects are those that result from the interaction of individual effects combined together on a single receptor or resource at a single point in time. Where a receptor is affected by multiple topics and there is the potential for significant in-combination effects to occur, these aggregated effects are reported within ES Chapter 20 Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6).

6.5.5 Table 6-8 sets out the summary of the scope for the assessment in this chapter. All scoped out elements as agreed in the EIA Scoping Opinion are confirmed in ES Appendix 5.3 Response to EIA Scoping Opinion, Volume II (Document reference 6.2, DCO Volume 6).

Table 6-8 Summary of the scope for air quality and odour assessment

Impact/Receptor	Construction	Operation	Decommissioning
Impact 1: Impacts on human and ecological receptors as a result of dust and particulate matter emissions	Scoped in	Scoped out	Scoped in
Impact 2: Impacts on human and ecological receptors as a result of NRMM and machinery emissions	Scoped in	Scoped out	Scoped in
Impact 3: Impacts on human receptors as a result of odour emissions	Scoped in	Scoped out	Scoped in
Impact 4: Impacts on human and ecological receptors as a result of road traffic emissions	Scoped in	Scoped out	Scoped in

6.5.6 It is noted that a construction workers hub may be temporarily required to act as a main hub for the Proposed Development. The construction workers hub would not be used to store materials, plant or other equipment. Due to uncertainty over timing and availability of potential temporary construction workers hub sites, the temporary construction workers hub would be identified by the Contractor, during the construction phase, and it is assumed that it would use an existing suitably consented site for the activities to be undertaken there. An assessment of environmental effects will already have been undertaken on the existing consented site, and no construction works would be taking place at the site. The construction workers hub is therefore not included in the DCO Order Limits and is not assessed in this chapter.

Study area

6.5.7 This section describes the spatial scope (the area which may be impacted) for the assessment of air quality and odour.

6.5.8 The air quality study area is defined by the distance over which impacts on air quality from all the Proposed Development elements (e.g. Above Ground Plant (AGP), construction works and access routes) may occur and by the location of any receptors that may be affected by changes in air quality resulting from those potential impacts.

6.5.9 The study area for the air quality assessment is defined as follows, based upon guidance:

1. Construction phase dust and fine particulate matter emissions [35]:
    a. Human receptors within 250m of the Order Limits and within 50m of routes used by construction vehicles (for routes used by construction-generated traffic up to 250m from the Order Limits).
    b. Ecological receptors within 200m of the Order Limits [40] and within 50m of routes used by construction vehicles (for routes used by construction-generated traffic up to 250m from the Order Limits).
2. Construction phase road traffic emissions:
    a. Human and ecological receptors within 200m [38] of a road affected by traffic flows exceeding the relevant air quality screening criteria. Additional information on construction traffic routes is provided in ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).
3. Non-Road Mobile Machinery emissions (adopted from NH 2024 [38])
    a. Human and ecological receptors within 200m of an area where NRMM will be operating.
4. Construction odour emissions:
    a. There are no specific distances provided in guidance that are assessed against. Potential odour impacts are assessed qualitatively by looking at the nearest receptors around various compass points from the potential odour source.

6.5.10 ES Figure 6.1 Air quality study area, Volume III (Document reference 6.3, DCO Volume 6), shows the air quality study area for the Proposed Development, along with boundaries of AQMA, relevant human receptors and designated ecological sites, Pollution Climate Mapping (PCM) model data [41] and local planning authority air quality monitoring locations.

Air quality standards and objectives

Air quality objectives for the protection of human health

6.5.11 The current AQOs (for the purpose of LAQM) of relevance to this assessment are outlined in Table 6-6~~Table 6-6~~. Air quality standards relate to ambient pollutant concentrations in air. They are set based on medical and scientific evidence of how each pollutant affects human health. AQOs incorporate future dates by which each

standard is to be achieved, taking into account economic considerations, practicability, and technical feasibility.

6.5.12 The pollutants of concern in the context of this air quality assessment are NO_2, PM_{10} and $PM_{2.5}$, as these pollutants are most likely to be present in ambient air at concentrations close to, or above, the air quality standards at sensitive receptors near to roads and are hence the focus of the assessment of vehicle emissions associated with the Proposed Development.

6.5.13 The AQOs only apply in locations likely to have 'relevant exposure', i.e. where members of the public are exposed for periods equal to or exceeding the averaging periods set for the standards. For this assessment, locations of relevant exposure include building facades of residential properties and, where relevant, schools, care homes and medical facilities. Places of work are not included as they are covered through Workplace Exposure Limits.

Critical Levels for the protection of vegetation and ecosystems

6.5.14 National AQOs also apply for the protection of vegetation and ecosystems, which are termed Critical Levels (pollutant concentrations in the atmosphere). Critical Levels apply irrespective of habitat type and are based on the concentration of the relevant pollutants in air.

6.5.15 The Critical Levels of relevance to this assessment relate to concentrations of nitrogen oxides (NO_x) and ammonia (NH_3) and are detailed in Table 6-9. The Critical Level for NOx is included within the Air Quality Standards Regulations. The Critical Level for ammonia is not included within the Air Quality Standards Regulations; however, a Critical Level for this pollutant is set out within the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution [42] and is adopted within this air quality assessment.

6.5.16 NO_x Critical Levels are provided as both long and short-term averaging periods. IAQM guidance [37] recommends that only the annual mean NO_x Critical Level is used in assessments, due to the comparative importance of annual effects upon vegetation. An exception is made when it is specifically required by the regulator where high short-term emissions may occur, such as from an industrial stack emission source. Given the consistent traffic exhaust emission source along road links and the absence of any short-term emission sources associated with the Proposed Development, only the annual mean Critical Level is considered in this assessment.

Table 6-9 Critical Levels for the protection of vegetation and ecosystems

Pollutant	Air quality objective	
	Concentration (µg m^{-3})	Measured as
NOx	30	Annual mean
NH_3	3*	Annual mean
*Critical Level is 1µg m^{-3} if lichen/bryophyte species are present		

6.5.17 Critical Loads (deposition of pollutants) for habitat sites in the UK are published on the APIS website [43] and are habitat specific. These are the maximum levels of nutrient nitrogen and acid deposition that can be tolerated without harm to the most sensitive habitats of these ecological features.

Assessment scenarios

6.5.18 ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6), provides an overview of the Proposed Development's approach to the temporal scope (the timescales over which impacts may occur) of the EIA. This section describes the temporal scope for the assessment, as it applies to the air quality impacts from traffic emissions and outlines the receptors for which assessment has been undertaken.

6.5.19 The indicative construction programme in ES Chapter 3 Proposed Development Description (Document reference 6.1, DCO Volume 6) shows that all construction activities in any one location will last less than five years. 2031 represents the last year significant construction traffic demand is forecast on the affected road network. Peak construction traffic has been provided as the 12 month period when construction traffic peaks for each specific location, to provide a robust assessment.

6.5.20 The assessment considers the following scenarios:

1. Baseline and verification year (2023).
2. 'Do Nothing' – future baseline (2031) traffic without the addition of committed developments, plans and projects and without the Proposed Development to disaggregate cumulative effects on designated ecological features. It includes projected traffic growth from the baseline year (2023-2031).
3. 'Do Minimum' – future baseline (2031) traffic without the Proposed Development. This assessment scenario represents the peak year forecast traffic demand along each road link on the highway network without the Proposed Development. It includes projected traffic growth from the baseline year (2023-2031) and includes committed development, plans and projects.
4. 'Do Something' – future baseline (2031) traffic with addition of construction traffic generated by the Proposed Development. This assessment scenario represents the peak year forecast traffic demand along each road link on the highway network with the Proposed Development. It includes projected traffic growth from the baseline year (2023-2031) and includes committed development, plans and projects.

6.5.21 The committed developments include any changes which are committed or otherwise reasonably expected to take place to existing conditions by the future design year(s). Committed development, plans and projects road traffic have been considered based on the following:

1. Plans or projects identified in the cumulative longlist within the 3km buffer from the Order Limits (Zone of Influence) used by Traffic and transport, as agreed with Hampshire County Council.
2. EIA projects and development plan allocations of >150 dwellings.

3. Plans or projects specifically put forward for inclusion in the shortlist by the local planning authorities during the engagement process.

6.5.22 To provide a conservative assessment, the peak construction flows have been assumed to occur during the earliest year of construction (2028). This is because tailpipe emission rates of pollutants and background pollutant concentrations are anticipated to be higher in 2028 than in later years of construction. Traffic data for the assessment is detailed in the ES Appendix 6.2 Air quality assessment traffic data, Volume II (Document reference 6.2, DCO Volume 6) and ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).

6.5.23 For the construction dust and NRMM assessments, the assessments utilise Defra background concentrations for NO_2, PM_{10} and $PM_{2.5}$. To provide a conservative assessment, 2025 (i.e. the current year when the assessment was undertaken) has been used for the assessment year. The use of 2025 is considered to be conservative given the forecasted reductions in future years of background pollutant concentrations following the introduction of legislative and policy initiatives, alongside low emission technologies/fuels.

Baseline methodology

Desk study

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

6.5.25 The following data sources have been accessed to inform the baseline with respect to air quality and odour (see Table 6-10). In addition to these data sources, the air quality and odour assessment draws on environmental baseline data collated for other topics, specifically road traffic data presented in ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).

Table 6-10 Data sources used to inform the air quality and odour assessment

Source of data	Baseline data
EBC, 2024 Air Quality Annual Status Report [44] (accessed February 2025)	Air quality monitoring data collected by local planning authorities within the air quality study area and baseline information
EHDC, Combined Air Quality 2022 and 2023 Annual Status Report [45] (accessed February 2025)	
Fareham and Gosport Borough Councils, 2024 Air Quality Annual Status Report (accessed February 2025)	
HBC, 2024 Air Quality Annual Status Report [46] (accessed February 2025)	
PCC, 2024 Air Quality Annual Status Report [47] (accessed February 2025)	
WCC, 2024 Air Quality Annual Status Report [48] (accessed February 2025)	
Defra LAQM Background Mapping data for local planning authorities [49] (accessed February 2025)	2021 based 1km x 1km Background pollutant mapping data

Source of data	Baseline data
Centre for Ecology and Hydrology. APIS. [43]	Details of critical loads for ecological habitats
HBC Environment Health Officer (pers. comm., 03 October 2023, 08 September 2025)	No actionable odour complaints were received by HBC in the last five years in respect to the operation of the Budds Farm WTW facility. One complaint was received by HBC and investigated but not escalated and was categorised as a transient issue. No enforcement action was taken. No odour complaints were received by HBC in relation to the historic landfill site.
Southern Water (pers. comm., 16 October 2023)	38 odour complaints received during the time span from 2018 to 2023 related to the operation of the Budds Farm WTW facility.
Southern Water (pers. comm., 21 May 2025)	The records show that there were no odour complaints in 2024.
Southern Water (pers. comm., 10 July 2025)	The records show that there have been no odour complaints to date in 2025.

6.5.26 Baseline data collection for the air quality and odour assessment has been desk-based. The EIA Scoping Opinion agreed that the utilisation of local air quality monitoring data, Defra background mapping and modelling to establish air quality conditions was an acceptable approach. Therefore, no surveys or monitoring specific to the air quality and odour assessment have informed the ES.

Assessment methodology

6.5.27 The approach to assessment is set out in ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6). approach air quality and odour assessment. The following sections outline the specific methodology used to assess the likely significant effects on air quality and odour. The terminology and method used for each assessment differs from the generic impact assessment terminology presented within ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6), as the assessments have been undertaken in accordance with the relevant technical guidance.

Impact 1: Construction dust and fine particulate matter

6.5.28 The effects of dust-producing activities during construction are assessed in accordance with the IAQM (2024) guidance [35]. The IAQM (2024) [35] guidance considers likely significant effects on amenity, human health receptors and designated nature conservation sites.

6.5.29 A summary of the assessment process is provided below:

Assessment steps

6.5.30 The assessment steps are as follows:

1. Step 1: Screen the need for a detailed assessment. If there are no receptors within the study area, then no additional assessment is necessary:
    a. A detailed assessment is required if there are human receptors within 250m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway network, up to 250m from the site entrance(s). Natural England [40] recommends that ecological receptors within 200m of a site should be considered in a construction dust and fine particulate matter assessment, in addition to those ecological sites within 50m of a site as stated within the IAQM guidance.
2. Step 2: Assess the risk of dust impacts individually for each of the four activities: demolition, earthworks, construction and trackout. This evaluation includes the following:
    a. Step 2A: Define the potential dust emission magnitude
    b. Step 2B: Define the sensitivity of the area
    c. Step 2C: Define the risk of dust impacts
3. Step 3: Determine site-specific mitigation.
4. Step 4: Examine the residual effects to determine whether or not these are significant.

6.5.31 Trackout is defined as the transport of dust and dirt from the construction site(s) onto the public road network.

6.5.32 Full details of the assessment methodology are provided in the ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6).

Magnitude

6.5.33 The magnitude of construction dust emissions are defined for each type of activity. These are broken down into the four categories: demolition, earthworks, construction and trackout. The dust emission magnitudes can either be small, medium or large and are dependent on the methods of wok undertaken and the scale of the activity.

6.5.34 The IAQM guidance provides broad ranges of the area of a site, the total building volume and the number of outward vehicle trips which are used to determine the dust emission magnitude.

6.5.35 The dust emission magnitudes for each activity are detailed in ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6).

Sensitivity

6.5.36 The sensitivity of receptors to construction dust are defined for human and ecological receptors and can be classed as either high, medium or low sensitivity to dust. The criteria are broken down into the sensitivity of the area to dust soiling effects on people and property, sensitivity of the area to human health impacts, and sensitivity of the area to ecological effects.

6.5.37 Definitions of the different sensitivity levels to dust [35], are given in ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6).

Significance of effect

6.5.38 In assessing the significance of construction dust effects using the IAQM guidance [35], the dust emission magnitude is combined with the sensitivity of the area to determine the risk of effects prior to mitigation. Risks of impacts can either be high, medium or low risk depending on receptor sensitivity and dust emission magnitude, and are considered for each activity (demolition, earthworks, construction and trackout). This is shown in more detail in the ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6).

6.5.39 This assessment deviates slightly from the methodology set out in ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6). The IAQM considers it to be most appropriate to only assign significance post-mitigation, as it assumes mitigation is inherent in the design/construction approach. A matrix is therefore not provided in the guidance to determine significance. The guidance notes that, with the implementation of the appropriate level of mitigation measures, the effects of dust generated during construction would be not significant under EIA Regulations.

6.5.40 In accordance with the IAQM guidance [35], effects are reported assuming implementation of mitigation secured in the Outline CEMP (Document reference 7.1, DCO Volume 7).

Impact 2: Construction Non-Road Mobile Machinery emissions assessment

6.5.41 During construction, intensive construction activities, for example horizontal directional drilling (HDD) works, may temporarily increase air emissions in the vicinity of receptors as a result of using diesel-powered plant, which may impact human receptors.

6.5.42 However, Defra technical guidance [34], states that emissions from NRMM used on construction sites are unlikely to have a likely significant effect on local air quality where relevant control and management measures are employed (see section 6.4). The guidance also states that in the vast majority of cases a quantitative assessment of emissions from NRMM is not required, and qualitative consideration of the potential impact is sufficient.

6.5.43 As NRMM control measures would be implemented as embedded mitigation secured through the Outline CEMP (Document reference 7.1, DCO Volume 7) (see section 6.4), a qualitative assessment of NRMM emissions has been undertaken taking into account:

1. The number and type of plant to be used
2. The working hours to be employed and the duration of works
3. Distances from NRMM to the nearest human and ecological receptors
4. Existing air quality conditions in the area (based on either local monitoring (where available) and/or Defra background pollutant concentration maps [49]

5. Prevailing meteorological conditions

6.5.44 The significance of effects has been determined using professional judgement, taking into account the factors above, including primary and tertiary mitigation measures. In the assessment, effects are reported as either ‘significant' or 'not significant' to provide a clear and straightforward classification.

Impact 3: Construction odour emissions assessment

6.5.45 During the construction of the WRP site, there may be odour emissions primarily resulting from the excavation of an historic landfill site.

6.5.46 In agreement with the respective local planning authorities (EBC, FBC, HCC, PCC, SDNPA and WCC) at the Emissions and Transport EIA Working Group on 03 November 2023, a qualitative assessment of odour has been undertaken in line with IAQM (2018) guidance on the assessment of odour for planning [32], to determine the potential for odour impacts.

6.5.47 Before an adverse impact, such as a loss of amenity or the generation of complaints, can take place, there must be exposure to odour. The occurrence of odour exposure relies on the presence of all three components in the source-pathway-receptor chain:

1. An emission source, which serves as a means for the odour to enter the atmosphere.
2. A pathway through which the odour can travel through the air to locations off-site. It is important to note that anything enhancing the dilution and dispersion of an odorous plume during its journey from the source to the receptor would diminish the concentration, consequently reducing exposure. Additionally, increasing the length of the pathway (e.g. by releasing from a high stack) would, under equal conditions, amplify dilution and dispersion and consequently reduce exposure at relevant receptor locations.
3. The existence of receptors, referring to individuals who could potentially experience an adverse effect. It is important to acknowledge that people vary in their sensitivities to odour.

6.5.48 The initial step in the assessment involves estimating the potential for odour generation from site activities, referred to as ‘source odour potential’. This estimation considers three factors:

1. The scale (magnitude) of the release from the odour source
2. The inherent odour intensity of the emission
3. The relative pleasantness/unpleasantness of the odour

6.5.49 Referring to the example risk ranking in Table 6-12, the source odour potential can be classified as small, medium, or large.

6.5.50 Subsequently, the effectiveness of the pathway needs estimation, taking into account:

1. The distance of sensitive receptors from the odour source
2. Whether these receptors are downwind considering the predominant wind direction

3. The effectiveness of the release point in facilitating proper dispersion
4. The topography and terrain between the source and the receptor

6.5.51 The significance of effect has been determined in accordance with the IAQM odour guidance [32]. Where the overall effect is greater than *"slight adverse"*, the effect is likely to be considered significant.

Sensitivity

6.5.52 Using the risk ranking example in Table 6-11, the pathway of the pollutant from the source to the receptor can be classified as ineffective, moderately effective, or highly effective.

6.5.53 Definitions of the different sensitivity levels for human receptors to odour [32] are also given in Table 6-11.

Table 6-11 Examples of risk factors for odour source, pathway and receptor sensitivity

Source odour potential	Pathway effectiveness	Receptor sensitivity
Factors affecting the source odour potential include: • The magnitude of the odour release (taking into account odour-control measures) • How inherently odorous the compounds are • The unpleasantness of the odour	Factors affecting the odour flux to the receptor are: • Distance from source to receptor • The frequency (%) of winds from the source to receptor (or, qualitatively, the direction of receptors from source with respect to prevailing wind) • The effectiveness of any mitigation/control in reducing flux to the receptor • The effectiveness of dispersion/dilution in reducing the odour flux to the receptor • Topography and terrain	For the sensitivity of people to odour, the IAQM recommends that the air quality practitioner uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the general principles outlined below in this table.
Large source odour potential Magnitude – Larger permitted processes of odorous nature or large WTW; materials usage hundreds of thousands of tonnes/m^3 per year; area sources of thousands of m^2. The compounds involved are very odorous (e.g. mercaptans), having very low Odour Detection Thresholds (ODTs) where known. Unpleasantness – processes classed as 'Most offensive' in Table 5; of the IAQM (2018) [32] guidance or (where known) compounds/odours having unpleasant (-2) to very unpleasant (-4) hedonic score.	**Highly effective pathway for odour flux to receptor** Distance – receptor is adjacent to the source/site; distance well below any official set-back distances [a]. Direction – high frequency (%) of winds from source to receptor (or, qualitatively, receptors downwind of source with respect to prevailing wind). Effectiveness of dispersion/dilution – open processes with low-level releases, e.g. lagoons, uncovered wastewater treatment plant, landfilling of putrescible wastes.	**High sensitivity receptor** Surrounding land where: • Users can reasonably expect enjoyment of a high level of amenity. • The people would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples include residential dwellings, hospitals, schools/educational facilities and tourist/cultural facilities.

Source odour potential	Pathway effectiveness	Receptor sensitivity
Mitigation/control – open air operation with no containment, reliance solely on good management techniques and good practice.		
Medium source odour potential Magnitude – smaller permitted processes or small WTWs; materials usage thousands of tonnes/m^3 per year; area sources of hundreds of m^2. The compounds involved are moderately odorous. Unpleasantness – processes classed in H4 as 'Moderately offensive'; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score. Mitigation/control – some mitigation measures in place, but significant residual odour remains.	**Moderately effective pathway for odour flux to receptor** Distance – receptor is local to the source. Where mitigation relies on dispersion/dilution – releases are elevated but compromised by building effects.	**Medium sensitivity receptor** Surrounding land where: • Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. • People would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples may include places of work, commercial/retail remises and playing/recreation fields.
Small source odour potential Magnitude – falls below Part B threshold; materials usage hundreds of tonnes/m^3 per year; area sources of tens m^2. The compounds involved are only mildly odorous, having relatively high ODTs where known. Unpleasantness – processes classed as 'Less offensive' in H4; or (where known) compounds/odours having neutral (0) to very pleasant (+4) hedonic score.	**Ineffective pathway for odour flux to receptor** Distance – receptor is remote from the source; distance exceeds any official set-back distances. Direction – low frequency (%) of winds from source to receptor (or, qualitatively, receptors upwind of source with respect to prevailing wind). Where mitigation relies on dispersion/dilution – releases are from high level (e.g. stacks, or roof vents >3m above ridge height) and are not compromised by surrounding buildings.	**Low sensitivity receptor** Surrounding land where: • The enjoyment of amenity would not reasonably be expected. • There is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples may include industrial, farms, footpaths and roads.

Source odour potential	Pathway effectiveness	Receptor sensitivity
Mitigation/control – effective, tangible mitigation measures in place leading to little or no residual odour.		
Notes: [a] Minimum 'setback' distances may be defined for some odorous activities: for example, standard setback distances for livestock housing units are a popular tool for odour regulation in Australia and New Zealand, Europe and the United States. In the UK, there is no universally agreed-upon set of minimum setback distances for odorous activities. However, the use of setback distances is one of the tools available to local planning authorities when assessing and controlling potential odour impacts from new developments		

Magnitude and significance

6.5.54 The next step in the assessment combines the estimates of source odour potential and pathway effectiveness, to predict the risk of odour exposure (impact) at the receptor location, as illustrated in the example matrix in Table 6-12.

Table 6-12 Risk of odour exposure (impact) at the specific receptor location

Pathway effectiveness	Source odour potential		
	Small	Medium	Large
Highly effective pathway	Low risk	Medium risk	High risk
Moderately effective pathway	Negligible risk	Low risk	Medium risk
Ineffective pathway	Negligible risk	Negligible risk	Low risk

6.5.55 The last stage involves assessing the impact of the odour on the exposed receptor, considering its sensitivity, as shown in the matrix provided in the guidance and presented in Table 6-13. The potential odour effects range from negligible and slight adverse to moderate adverse and substantial adverse. The terminology in Table 6-13 is taken from the IAQM odour guidance and differs from the terminology presented in ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6). For the purpose of this assessment, negligible and moderate retain their meanings, slight can be considered equivalent to minor and substantial can be considered equivalent to major.

Table 6-13 Likely magnitude of odour effect at the specific receptor location

Receptor odour exposure (impact)	Receptor sensitivity		
	Low	Medium	High
High risk of odour exposure	Slight adverse effect	Moderate adverse effect	Substantial adverse effect
Medium risk of odour exposure	Negligible effect	Slight adverse effect	Moderate adverse effect
Low risk of odour exposure	Negligible effect	Negligible effect	Slight adverse effect
Negligible risk of odour exposure	Negligible effect	Negligible effect	Negligible effect

6.5.56 To assess the significance of the effect, the evaluation has incorporated the following recommendation from IAQM:

> *"An assessment reaches a conclusion on the likely significance of the effects. Where the overall effect is greater than "slight adverse", the effect is likely to be considered significant. This is a binary judgement: either it is "significant" or "not significant". Concluding that an effect is significant should not mean, of itself, that a development proposal is unacceptable and the planning application refused; rather, it should mean that careful consideration needs to be given to the consequences, scope for securing further mitigation, and the balance with any wider environmental, social and economic benefits that the proposal would bring."*

6.5.57 As such, where the overall effect is moderate adverse or substantial adverse, the effect is likely to be considered significant.

Impact 4: Construction road vehicle exhaust emissions

6.5.58 Construction road vehicle exhaust emissions have been assessed through dispersion modelling, using the Cambridge Environmental Research Consultants (CERC) ADMS-Roads v5.0.1.3 software.

Traffic data

6.5.59 Traffic data that were used for the assessment are detailed in ES Appendix 18.1 Transport Assessment, Volume II (Document reference 6.2, DCO Volume 6).

6.5.60 Twenty-four-hour Annual Average Daily Traffic (AADT) flows and HDV percentages were derived for the peak construction flows across the construction period (see paragraph 6.5.19). The traffic data for the assessment includes all associated LDV/HDV movements including works and mini-buses, and is detailed in ES Appendix 6.2 Air quality assessment traffic data, Volume II (Document reference 6.2, DCO Volume 6).

6.5.61 Traffic data has been factored to account for traffic growth between the base year (2023) and the future assessment year (2031). This has been achieved by applying background growth factors that account for regional traffic growth from the Trip End Model Presentation Program (TEMPro), which takes into account traffic growth. These factored traffic data form the basis for analysing future traffic conditions under the scenarios discussed in paragraph 6.5.20. The TEMPro growth factors are presented within ES Appendix 18.1 Transport Assessment, Volume II (Document reference 6.2, DCO Volume 6).

6.5.62 For cumulative traffic, plans or projects have been considered based on the following:

1. Plans or projects identified in the cumulative longlist ES Appendix 20.1 List of ‘other developments’ – long- and shortlist, Volume II (Document reference 6.2, DCO Volume 6) within the 3km buffer from the Order Limits (Zone of Influence) used by Traffic and Transport, as agreed with Hampshire County Council.
2. EIA projects and development plan allocations of >150 dwellings.
3. Plans or projects specifically put forward for inclusion in the shortlist by the local planning authorities during the engagement process.

6.5.63 Traffic speeds have been provided as an average speed along each road link. Where road links have variable speed limits, the lower of either the average speed or the signposted speed has been assigned to provide a conservative approach.

6.5.64 Traffic speeds have been adjusted to simulate queues at junctions, traffic lights, roundabouts and other relevant locations, in accordance with LAQM.TG(22). Traffic speeds have been assumed to be consistent across all the modelled scenarios.

Emissions factors

6.5.65 Emissions factors have been obtained from the Emissions Factors Toolkit (EFT) v13.1 provided by Defra [50]. Emissions factors for 2023 have been used in the baseline and verification year assessment and emissions factors for 2028 (the first year of construction) have been used across all future year scenarios.

6.5.66 There has historically been uncertainty in the future vehicle emissions projections in previous versions of the EFT, particularly v8.0 and earlier. A position statement dealing with uncertainty in vehicle NOx emissions within air quality assessments, was published in July 2018 by the IAQM [51]. The position statement identifies that previous versions of Defra's EFT (v8.0 and before) predicted large reductions in NOx emissions that were not borne out in measured roadside concentrations, due to vehicle standards used in the fleet forecasting not being realised. It stated that a growing body of evidence suggested that the latest vehicle emission factors, which feed into the EFT (v9 and onwards), reflect real-world NOx emissions from road traffic more accurately. It was therefore judged that an exclusively vehicle emissions-based sensitivity test is no longer necessary in air quality assessments. Given this evidence, the use of emissions factors for the year corresponding to the model scenarios (2023 and 2028) is considered to be appropriate [51].

6.5.67 For quantification of the impact of NH_3 from road traffic emissions, the Air Quality Consultants tool 'CREAM V1A' has been used to provide NH_3 emissions factors for inclusion within the model [52]. It is noted that an updated version of CREAM (V2A) was released on 7 February 2025. It is understood that CREAM V1A is generally more conservative than CREAM V2A. However, there are some cases where CREAM V2A NH_3 emissions can be higher than those derived using CREAM V1A – particularly at lower speeds. As such, sensitivity testing was undertaken to compare the results of potential construction road vehicle exhaust emissions impacts upon ecological receptors (see paragraph 6.8.68).

Meteorological data

6.5.68 Thorney Island meteorological station is located 5.6km south-east of the Order Limits at its nearest point (Budds Farm WTW) and is considered the nearest and most representative station with sufficient data capture.

6.5.69 2023 sequential hourly meteorological data (including wind direction, wind speed, temperature, cloud cover and stability) from Thorney Island has been used to replicate meteorological conditions within the ADMS-Roads model.

Surface roughness

6.5.70 Surface roughness is a value (in metres) which is used to modify the wind profile within the model to represent the spatial density, orientation and height of obstacles on the Earth's surface to the approaching wind. A surface roughness value of 0.5m (parkland, open suburbia) was used to represent the dispersion site and a surface roughness value of 0.2m for the meteorological site, as advised by the meteorological data provider.

Model verification

6.5.71 Model verification has been undertaken in line with the method provided in LA QM.TG(22). The model adjustment fact or used for NOx has been derived as per the LAQM.TG(22) methodology presented in ES Appendix 6.3 Air dispersion model verification, Volume II (Document reference 6.2, DCO Volume 6). All NOx concentrations presented in the road vehicle exhaust emissions air dispersion modelling assessment are calculated following the process of model verification, using an adjustment factor of 4.297.

Background pollutant concentrations

6.5.72 Background NOx, NO_2, PM_{10} and $PM_{2.5}$ concentrations have been obtained from Defra mapping [49] for the 1km x 1km grid squares covering the study area, in the absence of available locally representative background monitoring sites.

6.5.73 Background NH_3 concentrations, nutrient nitrogen and acid deposition rates have been obtained from the APIS website [43] and are provided for 1km x 1km grid squares. The data are provided as three-year averages (2020-2022) and has been forward factored in line with the JNCC nitrogen futures study [53] (see paragraph 6.7.13).

6.5.74 To avoid the double counting of potential background sources already contained within the ADMS-Roads dispersion model, relevant sources were removed from the appropriate background map grid square using the NO_2 Adjustment for NO_x Sector Removal Tool v9.0 [54]. This was limited to 'Motorway In' for grid squares encompassing the sections of the M3 motorway that were being explicitly included in the ADMS-Roads dispersion model.

Screening criteria and assessed road links/haul roads

6.5.75 The requirement for a detailed air quality assessment of construction vehicle exhaust emissions at sensitive human receptors is considered, using screening criteria outlined in the IAQM and EPUK guidance [36].

6.5.76 NE guidance on the assessment of road traffic impacts on designated ecological sites [39] references the screening criteria contained in the Design Manual for Roads and Bridges LA105 air quality guidance [38]. As such, these criteria have been used to screen the potential air quality impacts at ecological receptor locations.

6.5.77 The assessment criteria are detailed in Table 6-14.

Table 6-14 Air quality road traffic assessment screening criteria

Guidance document	Receptor	Screening criteria	
IAQM and EPUK [36]	Human receptors	Light Duty vehicles (LDVs)	A change in AADT of more than 100 within or adjacent to an AQMA, or more than 500 elsewhere.
		HDVs	A change in HDV movements of more than 25 per day within or adjacent to an AQMA, or more than 100 elsewhere.

Guidance document	Receptor	Screening criteria	
Natural England	Ecological receptors	AADT	A change in AADT of 1,000 or more.
		HDVs	A change in HDV AADT of 200 or more.

6.5.78 The screening criteria for ecological receptors are considered by NE to equate to a 1% change in the Critical Level or Critical Load [39] which is regarded as a threshold of being not significant. A change less than this magnitude is likely to be within the natural range of fluctuation in deposition and is unlikely to be perceptible. Ecological receptors are screened using data for traffic introduced by the Proposed Development alone and also inclusive of relevant committed developments and live projects/plans within the study area as well as traffic growth from the base year (2023) to the future base year (2031) (the difference between the 'Do Something' and 'Do Nothing' traffic flows along each road link for which traffic data is available).

6.5.79 If vehicle movements generated by the Proposed Development are below the traffic screening criteria outlined in the IAQM and EPUK guidance [36], then effects on human receptors are considered to be not significant and can be screened out of further consideration.

6.5.80 More information on the derivation of the traffic flows is provided in ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6) and the traffic data used in the assessment is provided in ES Appendix 6.2 Air quality assessment traffic data, Volume II (Document reference 6.2, DCO Volume 6).

Human receptor assessment methodology

Sensitivity

6.5.81 The sensitivity of a human receptor is not considered in the assessment of air quality impacts. The AQOs which are health-based only apply at locations where there is relevant public exposure in accordance with LAQM.TG(22) guidance [34] and are detailed in Table 6-15.

Table 6-15 Examples of where the air quality objectives should and should not apply, as provided in the Local Air Quality Management Technical Guidance 2022 [34]

Averaging period	Objectives should apply to:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes, etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.

Averaging period	Objectives should apply to:	Objectives should generally not apply at:
24-hour mean	All locations where the annual mean Objective would apply, together with hotels and gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
1-hour mean	All locations where the annual and 24-hour mean Objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

Magnitude and significance

6.5.82 Guidance is provided by the IAQM and EPUK [36] to determine the significance of a development's impact on local ambient air quality. The guidance is utilised in the assessment to provide consideration of the effects associated with the Proposed Development.

6.5.83 The impact descriptors that take account of the magnitude of changes between the 'Do Minimum' and 'Do Something' scenarios in terms of annual pollutant concentrations (for annual NO_2, PM_{10} and $PM_{2.5}$, respectively), and the concentration in relation to the AQOs, are detailed in Table 6-16~~Table 6-16~~.

Table 6-16 Impact descriptors for individual human receptors

Long-term average concentration at receptor in assessment year	% Change in concentration relative to the air quality objectives			
	1	2 – 5	6 – 10	>10
75% or less of Objective	Negligible	Negligible	Slight	Moderate
76% – 94% of Objective	Negligible	Slight	Moderate	Moderate
95% – 102% of Objective	Slight	Moderate	Moderate	Substantial
103% – 109% of Objective	Moderate	Moderate	Substantial	Substantial
110% or more of Objective	Moderate	Substantial	Substantial	Substantial
Note: Figures are to be rounded up to the nearest round number. Any value less than 1% after rounding (effectively less than 0.5%) will be described as 'Negligible'.				

6.5.84 Further to the determination of the impact at individual receptors, the guidance recommends that assessment is made of the overall significance of the effects from a development on local air quality, which should be a professional binary judgement (i.e. significant or not significant). The overall significance takes into account the following factors:

1. The existing and future air quality in the absence of the Proposed Development
2. The extent of current and future population exposure to the effects
3. The influence and validity of any assumptions adopted when undertaking the prediction of effects

6.5.85 The guidance also states that a judgement of the significance shall be made by a competent professional who is suitably qualified. The air quality assessment and determination of the significance of effects of the Proposed Development on local air quality has been undertaken by members of the IAQM.

Ecological receptor assessment methodology

6.5.86 Designated ecological sites within 200m of the affected road network shown in ES Figure 6.1 Air quality study area, Volume III (Document reference 6.3, DCO Volume 6) have been considered only where they are sensitive to the effects of air pollution.

6.5.87 NE considers that, where the contribution of a project leads to pollutant concentration or deposition rate values below 1% of the Critical Level or Critical Load, impacts can be considered to be not significant. NE notes that for traffic-related impacts, this equates to a 1,000 AADT or 200 AADT HDV change in traffic flows. This is considered to be a reasonable determination of the level at which impacts of a project or plan are not significant. A change less than this magnitude is likely to be within the natural range of fluctuations in deposition and is not likely to be perceptible.

6.5.88 Any development-generated or cumulative values above 1% of the Critical Level or Critical Load requires additional assessment by an ecologist to determine whether any likely significant effects may be experienced at the affected habitats.

6.5.89 This assessment evaluates the changes between the future Do Nothing', 'Do Minimum' and future 'Do Something' scenarios with the Proposed Development, normal traffic growth and committed development, projects and plans. The assessment therefore inherently considers the cumulative effects of traffic generated by other committed developments during this period. Details on the cumulative assessment is addressed in the ES Chapter 20 Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6). For explanation of the traffic data used in this assessment, please refer to the ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).

6.5.90 The road links which pass alongside the designated sites considered in the assessment would experience background traffic growth between the base year (2023) and the construction period (2028-2033), which may increase nutrient nitrogen/acid deposition or NOx at the designated sites. These effects have been considered in the assessment (see section 6.8).

6.5.91 Receptors are selected at each screened in ecological feature. In line with DMRB LA105 guidance [40], they are represented by modelling transect receptor points. These points are modelled at 10m intervals, starting from the nearest point of the ecological feature to the road, up to a maximum distance of 200m from the road. This is irrespective of whether the habitat extends beyond 200m from the road.

Sensitivity

6.5.92 Designated ecological features have been considered only where they are sensitive to the effects of air pollution. Whilst Critical Levels (see Table 6-9) apply regardless of habitat type, Critical Loads for habitat types in the UK are published on the APIS website [43]. These are the maximum levels of nutrient nitrogen and acid deposition that can be tolerated without harm to the most sensitive habitats of these ecological features (see ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6)). Ecological receptor sensitivity information has been derived from APIS and supplemented through discussions with the suitably qualified project ecologist.

Magnitude and significance

6.5.93 Any development-generated or cumulative concentrations above 1% of the Critical Level, or deposition rates above 1% of the Critical Load, require additional assessment by an ecologist to determine whether any likely significant effects are anticipated to be experienced at the affected habitats. The determination of the significance of effects associated with airborne NO_x and NH_3 concentrations, and nutrient nitrogen and acid deposition rates are included in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

Haul road traffic

6.5.94 The potential impacts of haul road traffic on designated ecological features has been assessed as part of this ES. Haul road traffic flows have been provided and comprise of construction related vehicle trips using the haul roads, including construction related vehicle trips associated with temporary construction compounds accessed via a haul road.

6.5.95 Despite the relatively low number of vehicle trips expected to travel along the haul roads, the potential impacts on designated ecological sites as a result of LDVs and HDVs has been included to ensure all emissions sources for which data is available have been included in the assessment, therefore representing maximum parameters of the Proposed Development.

Cumulative effects

6.5.96 EIA Regulations mandate the assessment of effects associated with a project or plan, both alone and cumulatively with other plans or projects that may impact the same designated ecological feature. While a project or plan considered alone may not result in likely significant effects, Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (EIA Regulations 2017) require the consideration of impacts associated with a project or plan both in isolation, and in addition to other plans and projects which may affect the same designated site (a 'cumulative' assessment). The outcome of court judgements (notably the Wealden Judgement 2017 [55]) has led to the requirement for the 1% criterion to be applied to the cumulative impact to determine whether impacts remain insignificant, or whether additional ecological investigation is required.

6.5.97 TEMPro growth factors have been applied to baseline traffic data take account of Local Plan development allocations and therefore are broadly reflective of growth in traffic associated with these applications. A shortlist of developments was also included as agreed during engagement with local planning authorities. Full details are presented in ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6). Road traffic from larger more significant developments, as well as those relevant developments put forward following local planning authority engagement, has been assessed in addition to the background growth in order to provide a robust assessment. To avoid potential double counting of developments' influence on emissions, traffic growth has not been included when deriving cumulative effects. This approach has been agreed with Natural England during engagement in March 2025 (see section 6.3).

6.5.98 In addition, any consented agricultural or industrial projects in the vicinity of designated sites which may be affected by traffic generated by the Proposed Development may also contribute to cumulative NOx concentrations, NH3 concentrations, nutrient nitrogen deposition and acid deposition. NE developed Sites of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ) which specify the types of projects which may impact upon SSSIs based on the distance from the site, as shown in Table 6-17~~Table 6-17~~.

6.5.99 These IRZ criteria have been applied to relevant Ramsar sites, SACs, SPAs, Ancient Woodland and Sites of Importance for Nature Conservation (SINCs), in addition to SSSIs, to provide a conservative cumulative assessment.

Table 6-17 Natural England's Impact Risk Zones for Sites of Special Scientific Interest

Distance from Designated Site	Proposals, permissions and permits	
	Air pollution	Combustion
0 to 0.05km	All planning applications, except householder applications which are deemed too small to have a harmful effect on designated sites.	
0.05 to 0.2km	Any development that could cause air pollution or dust either in its construction or operation (including industrial/commercial processes, livestock and poultry units, slurry lagoons and digestate stores, manure stores). All general combustion processes including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.	All general combustion processes. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.
0.2 to 0.5km	Any development that could cause air pollution (including industrial/commercial processes, livestock and poultry units, slurry lagoons and digestate stores, manure stores). All general combustion processes including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.	
0.5 to 2km	Any industrial/agricultural development that could cause air pollution (including industrial processes, livestock and poultry units with floorspace >500m^2, slurry lagoons and digestate stores >200m^2, manure stores >250t). General combustion processes >20MW energy input including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.	General combustion processes >20MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.
0.5 to 2km	Any industrial/agricultural development that could cause air pollution (including industrial processes, livestock and poultry units with floorspace >500m^2, slurry lagoons and digestate stores >200m2, manure stores >250t). General combustion processes >20MW energy input including energy from waste incineration, other incineration, landfill	General combustion processes >20MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.

Distance from Designated Site	Proposals, permissions and permits	
	Air pollution	Combustion
	gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.	
2 to 5km	Any industrial/agricultural development that could cause air pollution (including industrial processes, livestock and poultry units with floorspace >500m^2, slurry lagoons and digestate stores >750m^2, manure stores >3,500t). General combustion processes >50MW energy input including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.	General combustion processes >50MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.

6.5.100 A search has been carried out for projects within the relevant distances of each ecological receptor screened into the assessment which meet the criteria in Table 6-17~~Table 6-17~~. This approach is in accordance with the requirements of IAQM guidance on the assessment of air quality impacts on designated nature conservation sites [37].

6.5.101 To identify the schemes which satisfied Natural England's IRZ criteria, searches were undertaken on the EA permit search webpage, the CEA longlist and on the planning portals for each of the relevant local planning authorities (i.e. those within 10km of the Proposed Development). The terms used when undertaking the IRZ searches described above were:

1. Farm
2. Poultry
3. Livestock
4. Generator
5. Combustion
6. Incineration
7. Fuel

6.5.102 Of the identified cumulative developments, the following was screened into the cumulative assessment:

1. Havant Borough Council: APP/24/00237. A proposed back up gas fuelled capacity mechanism embedded generation plant to support the National Grid. Development for five ignition engines, fuelled by natural gas, for electricity generation that together will generate a total of 20.6 MW. Planning permission granted 26 July 2024.

6.5.103 The worst case impact of this development on the Chichester and Langstone Harbour SSSI has been assessed cumulatively with the traffic impacts arising from both the Proposed Development and other committed development, plans and projects (see section 6.8).

6.5.104 Contributions above 1% of the Critical Level or Critical Load requires additional assessment by an ecologist to determine whether any likely significant effects may be experienced at the affected habitats.

6.6 Assumptions and limitations

6.6.1 This section provides a description of the assumptions and limitations to the air quality and odour assessment.

6.6.2 HBC and EHDC monitors concentrations of NO_2 within their respective administrative boundaries using diffusion tubes only. Diffusion tubes do not provide the same level of precision and accuracy as automatic monitoring methods. However, good quality assurance and quality control processes would reduce uncertainties insofar as this is possible. Furthermore, annual mean diffusion tube monitoring results are adjusted for bias using a factor derived using Monitoring Certification Scheme reference method monitoring equipment. The uncertainties and limitations to monitored air pollution data will apply to the baseline and

verification process. However, as the monitoring will have been undertaken following the good practice protocols described above the uncertainties and limitations are therefore unlikely to significantly affect the robustness of the assessment presented in this chapter.

6.6.3 An additional source of baseline data is available through the background pollutant concentrations within the air quality study area for NOx, NO_2, PM_{10} and $PM_{2.5}$, which have been derived using the pollution maps provided by Defra for 1km x 1km grid squares across the UK. This data is derived using an empirical model, calibrated using monitoring data from the UK Automatic Urban and Rural Network and, as such, there are inherent uncertainties associated with modelled data. However, the use of these maps is an industry-standard approach, and this approach is accepted by the EIA Scoping Opinion as discussed in paragraph 6.2.9. Uncertainties in these mapped background values are unlikely to significantly affect the conclusions of the assessment.

6.6.4 ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6), for feature(s) under each designated ecological site and Table 6-9 presents all Critical Levels. The background pollutant concentrations within the air quality study area derived from the APIS website are provided for 1km x 1km grid squares and provided as three-year averages (2020-2022) but not projected forward to future years. This data is derived using an empirical formula and, as such, there are inherent uncertainties associated with modelled data. However, the use of these maps is an industry-standard approach, and this approach is accepted by the EIA Scoping Opinion as discussed in paragraph 6.2.9. Uncertainties in these mapped background values are unlikely to significantly affect the conclusions of the assessment.

6.6.5 Given the spatial scale of the study area, it is not possible to predict pollutant concentrations across the entire area of all identified ecological features within the dispersion model. Instead, linear transects are selected as described in paragraph 6.5.93. These transects therefore only represent a small sample of the ecological feature as a whole. Given that the first point in the transect is closest to the road edge, this will represent the most conservative assessment of impacts at the ecological feature. However, depending on the configuration of the ecological feature in question relative to the road, it can result in transects that do not extend the full 200m because the ecological feature does not extend back that far beyond the closest road edge.

6.6.6 The construction dust and fine particulate matter assessment has been undertaken using a worst case scenario whereby the maximum amount of works (e.g. pipeline trenching, a temporary construction compound, AGP and the WRP site construction) are undertaken in proximity to the greatest number of human and ecological receptors and up to the Order Limit boundary. Where there is optionality within the Order Limits (e.g. for Section G: Crockerhill to Wickham, at the crossing of the River Meon and within Wickham Park Golf Club), all options have been assessed. Mitigation measures for these worst case locations have then been applied to all Proposed Development construction works, to provide a conservative and robust set of mitigation measures.

6.6.7 Construction traffic data has been utilised in the prediction of impacts at sensitive human and ecological receptor locations. Any assumptions made in the derivation of the traffic data are therefore applicable to the air quality assessment. For additional details please refer to the ES Chapter 18 Traffic and transport, Volume I (Document reference 6.1, DCO Volume 6).

6.6.8 It is assumed that as construction works for each activity would be undertaken in stages, so the NRMM associated with each activity would not all be operational simultaneously.

6.6.9 The ADMS Roads model relies on input data, including predicted traffic flows, which have associated uncertainties. The model simplifies complex physical systems into a set of algorithms. Furthermore, local micro-climatic conditions may affect pollutant concentrations that the model is unable to account for.

6.6.10 To reduce the uncertainty associated with predicted concentrations, model verification was carried out using local monitoring data. An adjustment factor was derived from this process. This is explained in more detail in ES Appendix 6.3 Air dispersion model verification, Volume II (Document reference 6.2, DCO Volume 6). The application of an adjustment factor provides reasonable confidence in the predicted concentrations.

6.6.11 The greatest level of uncertainty is related to the characterisation of NH_3 emissions. The understanding of NH_3 emissions is less well developed than for NOx emissions. However, the use of the CREAM tool provides an accepted approach to characterising NH_3 emissions. Furthermore, the JNCC Nitrogen Futures [53] 'business as usual' scenario has been adopted to ensure a robust assessment of future NH_3 and nitrogen deposition levels.

6.7 Baseline conditions

6.7.1 To provide an assessment of the likely significant effects from the Proposed Development (in terms of air quality and odour), it is necessary to identify and understand the baseline conditions in the study area. This provides a reference point against which potential changes in air quality and odour can be assessed. Identification of relevant receptors for each of the impact assessments has also been undertaken.

Current baseline

6.7.2 This chapter considers the baseline conditions for receptors across the Proposed Development as a whole, as set out in ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6) rather than for each individual component of the Proposed Development.

6.7.3 The baseline accounts for:

1. Air Quality Management Areas
2. Background pollutant concentrations
3. Pollution climate mapping
4. Air quality monitoring
5. Baseline odour conditions

Air Quality Management Areas

6.7.4 A review of the Defra UK AIR AQMAs Interactive Map [56], shows that within the study area there are two statutory AQMAs as follows:

1. Portsmouth AQMA No.9
2. Eastleigh AQMA No.1 (A335)

6.7.5 Eastleigh AQMA No.2 (M3) was declared by EBC for exceedances of the annual mean NO_2 AQO. The AQMA has had no recent exceedances measured for NO_2 within the study area and has been revoked, following more than five years of compliance with the annual mean NO_2 AQO [57].

6.7.6 Eastleigh AQMA No.1 (A335) was declared by EBC for exceedances of the annual mean NO_2 AQO. Monitored annual mean NO_2 concentrations within the AQMA demonstrated a reduction in concentrations over a five-year period and is expected to be considered for revocation if compliance is confirmed in 2024 monitoring data [57].

6.7.7 Portsmouth AQMA No.9 was declared by PCC for exceedances of the annual mean NO_2 AQO. It is noted that this location of the study area in proximity to the Portsmouth AQMA No.9 is associated with the Eastney Long Sea Outfall (LSO) and Eastney Transfer Tunnel (TT). These parts of the Proposed Development are not likely to result in emissions in or near this AQMA as this area of the Order Limits is a section of existing underground pipeline.

6.7.8 AQMA locations relative to the air quality study area are presented in ES Figure 6.1 Air quality study area, Volume III (Document reference 6.3, DCO Volume 6).

Background pollutant concentrations

6.7.9 Estimates of current and future year background pollutant concentrations in the UK are available on the Defra UK-Air website [49]. The estimated annual mean background estimates are a combination of measured and modelled data. They are available across 1km grid squares across the UK for a 2021 reference year, which is the basis for the future year estimates up to 2040. These background estimates include contributions from all source sectors, e.g. road transport, rail, aircraft, industry, point sources, agriculture, and domestic and commercial heating systems.

6.7.10 Estimated annual mean background NO_2, PM_{10} and $PM_{2.5}$ concentrations (based on a 2021 reference year) are presented as maximum and minimum values across the air quality study area for 2025, as shown in Table 6-18.

Table 6-18 Estimated annual mean background pollutant concentrations within the study area

Parameter	Mapped background concentration 2025 µg/m^3		
	NO_2 µg/m^3	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3
Minimum	7.28	9.23	5.89
Maximum	15.32	14.36	7.98
AQO	40	40	20

6.7.11 As shown in Table 6-18 the estimated maximum annual mean background NO_2, PM_{10} and $PM_{2.5}$ concentrations within the study area are well within (i.e. less than 75% of), and therefore meet, the respective AQOs. There is a larger variation in minimum and maximum concentration of NO_2 than particulate matter. This is likely due to background NO_2 being higher in proximity to more urban areas or major roads, and lower in rural areas with very few pollution sources. Concentrations of particulate matter may show less variation as this pollutant is not only emitted by road traffic and industry but has a natural component which can form a significant proportion of the total concentration, particularly in coastal areas where sea salt aerosol is present. These can also, on occasion, be influenced by long-range transport of pollutants across Europe.

6.7.12 Background concentrations of NO_x have been obtained from the latest 2021-based Defra background maps for the assumed construction period 2028–2034 for the 1km x 1km grid squares covering the study area [49].

6.7.13 Background NH_3 concentrations, nutrient nitrogen and acid deposition fluxes have been obtained from the APIS website and are provided for 1km x 1km grid squares. The data is provided as three-year averages (2020-2022), but, unlike Defra mapping, are not projected forward to future years. The Nitrogen Futures [53] study forecasts a minimum rate of improvement in background nitrogen deposition rates of 0.07kgN.ha^{-1}.yr^{-1}, with other forecasts indicating a greater rate of reduction. In line with this forecast, and therefore taking a precautionary approach, this assessment applies a projected decrease in background nutrient nitrogen deposition rate of 0.07kgN.ha^{-1}.yr^{-1}. Over the seven year period (2021-2028), this equates to 0.49 kgN.ha^{-1}.yr^{-1} by 2028. This decrease is also reflected in the total average acid deposition rate for nitrogen in 2028 (reduction per year of 0.0049 keq.ha^{-1}.yr^{-1}N). Over a seven year period (2021-2028), this equates to 0.0343 keq.ha^{-1}.yr^{-1}N by 2028.

6.7.14 Background concentrations considered in the ecological assessment are provided in Table 1-2 of the ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6).

6.7.15 As shown by comparing the Critical Levels and Critical Loads in Table 1-2 with existing background concentrations in ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6), NO_x concentrations are well below (i.e. less than 75% of) the relevant Critical Level. Background concentrations of NH_3 are above the lower Critical Level (1µg/m^3) but well below the upper Critical Level (3µg/m^3). Nutrient nitrogen deposition backgrounds and acid deposition backgrounds are above Critical Load range at a number of ecological features (highlighted in bold text in ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6)).

Pollution Climate Mapping

6.7.16 Defra's PCM model provides estimates of roadside concentrations of annual mean NO_2, which have historically been used for reporting to the EU to demonstrate

compliance with limit values. The model provides projected roadside concentrations of pollutants, for the years 2019-2023 inclusive.

6.7.17 All links in Defra's PCM model within the study area, demonstrate compliance of the annual mean NO_2 standard in the most recent (2023) dataset.

Air quality monitoring

6.7.18 Local planning authorities monitor pollutants in several ways, such as automatic monitoring and non-automatic monitoring, to assess and manage air quality.

6.7.19 HBC and EHDC have not undertaken automatic (continuous) monitoring in recent years. EBC, FBC, PCC and WCC undertake continuous monitoring, however, the stations are not within 1km of the Order Limits and are therefore outside of the air quality study area.

6.7.20 Annual mean NO_2 concentrations (non-automatic monitoring i.e. diffusion tube monitoring) are, however, measured by EBC, HBC, PCC, WCC, EHDC and FBC. Diffusion tube sites in EHDC and FBC are not located within the air quality study area. Monitored data within the study area using diffusion tubes is presented in Table 6-19~~Table 6-19~~ and local monitoring data from 2020 and 2021 should be treated with caution because pollutant concentrations during these years were affected by restrictions associated with the Covid-19 pandemic.

6.7.21 Diffusion tube measurements indicate that the annual mean NO_2 objective (40µg m^{-3}) was not exceeded between 2019 and 2023 at EBC locations shown in ES Figure 6.1 Air quality study area, Volume III (Document reference 6.3, DCO Volume 6). Measured concentrations at these sites over the period 2019-2023 are provided. Data for 2019 represents pre-Covid-19 traffic conditions, HBC and WCC in the air quality study area. Exceedances within PCC occurred at three locations in 2019 (152, 154 and 162) and one location in 2021 (229).

Table 6-19 Annual mean nitrogen dioxide monitoring in the study area

Local planning authority	Site ID	Site name	Site type	X (Easting), Y (Northing) Ordnance Survey Grid Reference	Pollutant concentration (µg m^{-3})				
					2019	2020	2021	2022	2023
EBC	BR	Bishopstoke Road	R	446604, 119149	33.80	29.60	29.00	30.50	25.40
EBC	BR2	Bishopstoke Road 2	R	446051, 119171	31.30	26.80	26.60	27.20	24.70
EBC	FOR	Fair Oak Road	R	447427, 118780	20.10	17.60	17.30	16.80	16.50
EBC	FORSL	Fair Oak Road/Sandy Lane	R	448788, 118553	28.00	23.40	23.90	24.60	23.60
EBC	NH	Nuffield Hospital	UB	445121, 122183	26.00	22.90	30.80	30.60	15.30
EBC	PC	Porteous Crescent	UB	444656, 120775	24.00	17.80	19.50	18.10	15.40
HBC	2	Rectory Road	S	471742, 105794	22.30	18.20	20.10	18.50	18.50
HBC	7B	Brockhampton Lane	UC	471180, 106064	24.50	19.50	21.00	20.20	19.40
HBC	10	Ramblers Way	S	470028, 110044	20.00	15.00	16.60	16.20	14.40
HBC	12	Xyratex	R	471613, 105672	25.40	20.60	23.90	22.60	22.30
HBC	14	Elm Park Road	S	471783, 106794	17.90	15.80	15.90	14.70	13.70
HBC	19C	Langstone Road East (Woodbury)	R	471637, 105687	33.90	27.70	29.90	28.40	26.70
HBC	20	Bosmere Junior School	UC	471706, 105933	25.70	19.90	20.20	19.10	19.80
HBC	22	Park Road South (Bulbeck Jctn)	R	471573, 106199	30.70	23.70	25.90	26.70	25.40
HBC	27	Havant Precinct	UB	471654, 106287	20.90	19.70	19.90	19.20	18.80

Local planning authority	Site ID	Site name	Site type	X (Easting), Y (Northing) Ordnance Survey Grid Reference	Pollutant concentration (µg m^{-3})				
					2019	2020	2021	2022	2023
HBC	28	Park Road South (West Street)	R	471577, 106280	33.40	25.10	28.60	28.90	28.00
HBC	W10	Compton Court (New Road)	R	471368, 106805	26.70	21.40	24.80	23.80	21.20
PCC	9	6 Northern Road (NR-6)	R	465621, 105528	33.60	29.72	29.98	29.90	29.61
PCC	11	Anchorage Road (AR-Col6)	R	466869, 103457	20.70	18.80	20.99	20.00	18.59
PCC	20	136 Eastney Rd (ER-136)	R	466712, 99415	24.01	21.79	22.71	22.01	21.64
PCC	70	Milton Primary School (ER-DS)	R	466667, 99546	21.58	19.59	24.08	21.35	19.59
PCC	71	19 Havant Road (HR-19)	K	465711, 105624	25.19	21.97	23.08	22.18	23.14
PCC	72	60 Northern Road (NR-60)	R	465657, 105577	23.33	19.33	20.73	20.85	21.09
PCC	73	52 Northern Road (NR-52-54)	R	465653, 105544	23.78	20.24	22.04	21.09	21.19
PCC	75	1-6 Chipstead House Southampton Road (SR-CH)	R	465618, 105619	21.25	20.19	20.43	20.60	19.13
PCC	78	3 Goldsmith Avenue (GA-3)	R	466523, 99599	19.91	17.88	21.30	19.72	20.01
PCC	92	Locksway Road-13 (LR-13)	R	466525, 99736	25.70	19.26	21.11	21.16	20.75
PCC	98	13-29 Eastern Road (ER-13/29)	R	466700, 100591	18.19	17.10	17.19	18.81	17.56

Local planning authority	Site ID	Site name	Site type	X (Easting), Y (Northing) Ordnance Survey Grid Reference	Pollutant concentration (µg m^{-3})				
					2019	2020	2021	2022	2023
PCC	99	64-80 Eastern Road (ER-64/80)	R	466727, 100572	20.29	18.98	18.94	18.46	18.35
PCC	100	340 Havant Road (HR-340)	R	467783, 105677	19.94	15.19	19.57	19.14	17.71
PCC	101	Column 52 Havant Road (HR-Col52)	R	467693, 105687	25.00	22.21	23.58	21.55	22.77
PCC	102	Hillside and Wymering Centre Service Road (SR-HWC)	R	464585, 105714	23.71	21.86	24.34	21.52	21.05
PCC	124	Hillsley Road Column 23 (HR- Col23)	R	462491, 106553	26.07	23.83	24.18	24.52	25.44
PCC	135	Southampton Road - North (SR- N)	K	464526, 105665	25.73	23.62	24.92	27.69	24.15
PCC	136	Southampton Road - North (SR- S)	R	464512, 105641	26.67	25.35	27.48	25.20	27.90
PCC	146	Column 1 Sevenoaks Road (SOR-Col1)	R	465265, 105807	26.69	19.73	19.01	19.69	19.21
PCC	147	Column 4 Sevenoaks Road (SOR-Col4)	R	465303, 105817	26.17	22.51	20.27	21.70	22.45
PCC	148	Column 146 Southampton Road (SR-Col146)	R	464670, 105713	24.19	21.25	26.51	25.35	27.09
PCC	149	Column 147 Southampton Road (SR-Col147)	R	464665, 105737	33.93	27.93	27.53	29.33	27.72

Local planning authority	Site ID	Site name	Site type	X (Easting), Y (Northing) Ordnance Survey Grid Reference	Pollutant concentration (µg m^{-3})				
					2019	2020	2021	2022	2023
PCC	150	Column 154 Southampton Road (SR-Col154)	R	464791, 105775	37.46	30.57	32.08	32.67	30.68
PCC	151	Column 155 Southampton Road (SR-Col155)	R	464806, 105751	31.83	24.81	24.81	25.07	25.71
PCC	152	Column 171 Southampton Road (SR-Col171)	R	465169, 105763	**41.97**	35.79	32.64	36.41	34.81
PCC	153	Column 172 Southampton Road (SR-Col172)	K	465173, 105784	36.31	27.23	27.64	27.05	31.77
PCC	154	Column 177 Southampton Road (SR-Col177)	R	465337, 105726	**43.04**	32.10	31.94	32.24	33.74
PCC	155	Column 178 Southampton Road (SR-Col178)	R	465350, 105748	35.76	27.42	29.99	30.00	31.08
PCC	158	Column 106 Eastern Road (ER- Col106)	R	467322, 103333	33.96	27.80	32.09	35.95	30.51
PCC	159	Column 107 Eastern Road (ER-Col107)	R	467357, 103337	39.16	34.23	33.93	34.70	33.04
PCC	162	Column 51 Eastern Road (ER-Col51)	R	467441, 104208	**45.25**	32.68	39.70	36.98	37.04
PCC	163	Column 52 Eastern Road (ER- Col52)	R	467423, 104211	38.56	30.45	35.07	36.67	34.50
PCC	164	Column 2 Allaway Avenue (AA-Col2)	K	464707, 105787	34.57	26.70	28.54	30.18	28.12

Local planning authority	Site ID	Site name	Site type	X (Easting), Y (Northing) Ordnance Survey Grid Reference	Pollutant concentration (µg m^{-3})				
					2019	2020	2021	2022	2023
PCC	165	Column 3 Allaway Avenue (AA-Col3)	R	464716, 105817	30.25	26.97	26.87	26.41	24.93
PCC	166	Column 2 Anchorage Road (AR-Col2)	R	467269, 103292	34.71	29.47	28.11	29.76	28.73
PCC	176	Column 3 Anchorage Road (AR-Col3)	R	467269, 103275	29.41	25.50	28.72	29.66	25.51
PCC	179	Building on eastern side of Junction Southampton Road/Allaway Avenue Junction (AAOB) Road/Allaway	R	464735, 105784	N/A	24.21	26.23	24.91	25.12
PCC	227	Eastern Road-Column 118 (ER- Col118)	K	467389, 103185	N/A	N/A	38.29	33.94	32.88
PCC	228	Eastern Road- Column 119 (ER- Col119)	K	467358, 103189	N/A	N/A	28.36	27.72	27.36
PCC	229	Eastern Road- Column 59 (ER-Col59)	R	467429, 104140	N/A	N/A	**41.80**	35.69	34.18
PCC	230	Eastern Road- Column 60 (ER- Col60)	R	467411, 104143	N/A	N/A	33.41	34.57	32.10
PCC	241	Goldsmith Avenue- Column 6 (GA- Col6)	R	466467, 99627	N/A	N/A	25.27	24.04	24.98

Local planning authority	Site ID	Site name	Site type	X (Easting), Y (Northing) Ordnance Survey Grid Reference	Pollutant concentration (µg m^{-3})				
					2019	2020	2021	2022	2023
PCC	242	Goldsmith Avenue- Column 7 (GA-Col7)	R	466453, 99649	N/A	N/A	22.58	19.94	19.12
WCC	District 6	Winchester Rd, Wickham	R	457203,111380	26.80	21.60	21.50	N/A	-

R = Roadside; S= Suburban; UC = Urban Centre; UB = Urban Background; K = Kerbside
Annual mean objective is 40µg m^{-3} for NO_2
Exceedances of the NO_2 annual mean objective of 40µg m^{-3} are shown in bold.
"-" = site has been decommissioned
N/A = not available

Baseline odour conditions

6.7.22 Budds Farm WTW is a potential source of odour in the study area. However, operations at Budds Farm WTW incorporates odour management systems to ensure any odour from the WTW has no detrimental impact on the quality of the local environment. This is supported by Havant Borough Council's confirmation of no recent actionable odour-related complaints, coupled with the Applicant's receipt of 38 complaints from 2018-2023 (information provided for the PEI Report assessment). According to the records provided by Budds Farm WTW, there were no complaints received by Budds Farm WTW in 2024 and no actionable complaints up to 8 August 2025. This underscores the infrequency of odour issues, and the fact that the WRP site would receive final effluent that would already be extensively cleaned and treated at Budds Farm WTW, further reduces the likelihood of significant odour impacts.

6.7.23 The WRP site would be located on the site of a historic landfill where it is understood that materials were deposited from the 1960s to 1980s. As such, any organic material is likely to have large decomposed over time, reducing the potential for odour generation from residual landfill materials. Notwithstanding this, it is understood that the historic landfill site is still producing landfill gas. This is evidenced in ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6), where the following odours were observed within the landfill material at various sections of the landfill site, as part of the ground investigations:

1. Putrid, foul or rotten odours throughout the waste
2. Solvent odours
3. Ashy or burnt odours
4. Hydrocarbon odours
5. Organic odour

6.7.24 It is considered that Budds Farm WTW is the primary existing source of odour in the area. As detailed above, there has been an absence of actionable odour complaints in the vicinity in relation to Budds Farm WTW, which is considered to be the primary source of odour relative to the historic landfill site in the local area. The absence of actionable community complaints therefore suggests that baseline odour conditions in relation to the historic landfill are generally good.

Identification of receptors

Impact 1: Construction dust and fine particulate matter

6.7.25 The construction dust and fine particulate matter assessment has been undertaken using a worst case scenario, whereby the maximum amount of anticipated construction works are assumed to be undertaken in proximity to the greatest number of human and ecological receptors. The four areas considered in the assessment are set out below:

1. The WRP site (located approximately 500m north-west of the existing Budds Farm WTW).

2. At open-cut sections (other pipeline installation techniques, e.g. trenchless and tunnel, are anticipated to create less dust than the open-cut sections during construction) along the Pipeline.
3. Temporary construction compounds for trenchless construction works or tunnel launch and reception shafts.
4. Above Ground Plant, such as the Intermediate Pumping Stations (IPS) and Break Pressure Tanks (BPT).

6.7.26 Mitigation measures for these worst case locations are then applied to all construction works.

Human receptors

6.7.27 As detailed in the ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6), the number of receptors potentially exposed to dust impacts is a factor that determines the receptor sensitivity.

6.7.28 The location of the maximum amount of anticipated construction works, i.e. the dustiest activities and greatest number of receptors within proximity to the construction works, was determined to be at the open-cut sections along the Pipeline between the WRP site and Otterbourne Water Supply Works (WSW), specifically in the locale of temporary construction compound and earthworks activities and in the locale of the temporary construction compound B1-3 access route for trackout. Therefore, these areas have been the focus of the construction dust assessment for human receptors along the Pipeline between the WRP site and Otterbourne WSW, to provide a conservative assessment.

6.7.29 All temporary construction compound locations proposed as part of construction works have been considered (see ES Figure 1.1 Location of the Proposed Development and Order Limits, Volume III (Document reference 6.3, DCO Volume 6) for location of temporary construction compounds), with the temporary construction compound locations resulting in the greatest risk of dust impact reported in section 6.8. These temporary construction compounds were identified to be temporary construction compound E-1 and Reception Shaft temporary construction compound. These are located adjacent to Portsdown Road in Widley and are situated in Section E: Portsdown Hill to Boarhunt. Therefore, this area has been the focus of the construction dust risk assessment for human receptors at a temporary construction compound location, to provide a conservative assessment.

6.7.30 AGP locations were considered separately to temporary construction compound locations. As above, each AGP location has been considered, with the potential AGP location resulting in the greatest risk of dust impact reported in section 6.8. This AGP was identified to be IPS-G for human receptors, which is located to the north-west of Wickham. For ecological receptors, the AGP considered is Break Pressure Tank and Intermediate Pumping Station E (BPT/IPS-E), situated adjacent to Portsdown Road in Widley, in Section E of the Pipeline between the WRP site and Otterbourne WSW.

6.7.31 The assessment has also considered construction dust impacts at the WRP site.

6.7.32 There may be areas along the Proposed Development where a greater number of human receptors are present within 250m of construction activities, however, these

receptors would be either further away from construction works relating to the worst case scenario mentioned above, or closer to a reduced level of construction works. It is therefore anticipated that the sensitivity of the area in relation to these receptors would be equal to, or less than, the sensitivities of the areas detailed above.

6.7.33 The mitigation measures identified to suppress dust emissions (see section 6.4 and section 6.9) would be applied across the Proposed Development construction works. Therefore, the measures are not only applicable as mitigation for those receptors included within the assessment, but across the Proposed Development area as a whole. As such, the assessment is considered robust.

Ecological feature receptors

6.7.34 Designated ecological features that may be sensitive to dust impacts within 200m of the Order Limits of the Proposed Development (or within 50m of access routes) are identified in ES Figure 6.2 Construction dust and fine particulate matter buffers (inc. trackout), Volume III (Document reference 6.3, DCO Volume 6).

6.7.35 These are identified as the Chichester and Langstone Harbours Ramsar and SPA, Langstone Harbour SSSI, Portsdown SSSI, River Itchen SSSI and SAC, Solent Maritime SAC, SPA, Ramsar and a number of Ancient Woodland (AW) and Local Wildlife Sites (LWS) (known as Sites of Importance for Nature Conservation (SINCs) in Hampshire) within 200m of the Proposed Development Order Limits (see ES Figure 6.2 Air quality construction dust and fine particulate matter buffers (inc. trackout), Volume III (Document reference 6.3, DCO Volume 6)).

6.7.36 Four different construction activities are considered in this construction dust risk assessment: demolition, earthworks, construction and trackout.

Impact 2: Construction Non-Road Mobile Machinery emissions

6.7.37 The NRMM emissions assessment has been undertaken using a worst case scenario, whereby the most intensive NRMM activity is proposed in proximity to the greatest number of human and ecological receptors, as set out below.

6.7.38 Human and ecological receptors have been assessed within 200m of the Order Limits where NRMM would be located.

6.7.39 The NRMM assessment has been separated into assessment of the WRP site, and the Pipeline including temporary construction compounds and AGP. This is because construction activities proposed at the WRP site temporary construction compound are notably different from the remainder of the pipeline. The temporary construction compound at the WRP site is proposed to operate as the temporary construction compound for the WRP site, as well as the launch shaft for the tunnelling to Otterbourne WSW, the Pipelines between Budds Farm WTW and the WRP site, and the tunnelling to Bedhampton Springs.

Water Recycling Plant site

6.7.40 The closest residential receptors to the WRP site are located 170m to the north, along Mill Lane. The Broadmarsh Business and Innovation Centre is located approximately 35m east of the temporary construction compound. The closest

ecological receptors to the construction works at the WRP site are located 175m to the south of the temporary construction compound at the closest point. These include the Chichester and Langstone Harbours SPA and Ramsar Site; Langstone Harbours SSSI; and Solent Maritime SAC.

Pipeline route

6.7.41 Construction works associated with temporary construction compound locations and AGP locations have been considered in this assessment. It is considered that the most intensive construction activities would occur at temporary construction compounds proposed for trenchless construction works, tunnel launch shafts/tunnel reception shafts and AGP. Therefore, these locations have been the focus of the assessment.

6.7.42 The location of maximum NRMM impact along the Pipeline route, has been determined to be temporary construction compound E-1 at Widley Farm, to the north of Portsdown Hill Road. This area, situated between the Pipeline between the WRP site and Otterbourne WSW, is expected to experience the most intensive construction activities and has the greatest number of receptors downwind and in close proximity to the Order Limits.

6.7.43 This is due to temporary construction compound E-1 being for the construction of AGP BPT/IPS-E, tunnelling temporary construction compound for Section D: The Water Recycling Plant site to Portsdown Hill, tunnel reception shaft and sectional site temporary compound. Furthermore, sectional temporary construction compound E-2 is located directly adjacent to temporary construction compound E-1. Therefore, the close proximity of these temporary compounds and associated NRMM contribute to the impact in this area.

6.7.44 The closest human receptors are to the eastern edge of temporary construction compound E-1, with approximately 150 residential dwellings within 200m.

6.7.45 The closest ecological feature to this location is the Portsdown SSSI located 150m south-west at its closest point to temporary compound E-1.

Impact 3: Construction odour emissions

Human receptors

6.7.46 As discussed in section 6.6, during the construction of the WRP site, there may be odour emissions primarily resulting from the excavation of an historic landfill. Therefore, the WRP site is the focus of the odour assessment.

6.7.47 There are residential human receptors (high sensitivity to odour) and commercial units (medium sensitivity to odour) within 200m of the WRP site. These receptors have been considered in the assessment of construction phase odour emissions.

Impact 4: Construction road traffic emissions

Human receptors

6.7.48 Existing sensitive receptors are located within 200m of road links within the air quality study area. Assessment of specified receptors was not required because

the screening exercise concluded that detailed modelling is not required, as discussed in section 6.8.

Ecological feature receptors

6.7.49 A number of designated ecological features are located within 200m of roads which are anticipated to experience increases in construction-related traffic flows above the criteria detailed in Table 6-14. The designated ecological features that have been screened into the assessment (i.e. within 200m of road links that trigger the criteria detailed in Table 6-14 within the air quality study area) are detailed in Table 1-1 of the ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6).

6.7.50 The APIS website [43] and the Biodiversity Team for the Proposed Development have been consulted to identify any habitats of the ecological features that are sensitive to nutrient nitrogen and acid deposition. Where sensitive habitats have been found, the Critical Loads for nutrient nitrogen and acid deposition have been obtained and are provided in Table 1-2 of the ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6). The most sensitive habitat types have been included to provide a conservative assessment. [43] and the Biodiversity Team for the Proposed Development have been consulted to identify any habitats of the ecological features that are sensitive to nutrient nitrogen and acid deposition. Where sensitive habitats have been found, the Critical Loads for nutrient nitrogen and acid deposition have been obtained and are provided in Table 1-2 of the ES Appendix 6.4 Ecological features, background concentrations, background deposition rates and Critical Loads, Volume II (Document reference 6.2, DCO Volume 6). The most sensitive habitat types have been included to provide a conservative assessment.

Future baseline

6.7.51 The baseline review of air quality and odour provides a clear indication that air quality and odour in the study area is generally good, which is to be expected in an area which is largely rural in nature, with areas of air quality concern and monitoring confined to urbanised areas and in proximity to busy roads and motorways. Air quality is managed, and improvement driven, through UK and local legislation and policies. The United Kingdom's national air quality strategy and standards are enacted locally through management actions at a local planning authority level including a LAQM framework. There is a policy trend towards the achievement and maintenance of good air quality across the UK, which is reflected in the local planning policies also detailed in section 6.2.

6.7.52 Air pollution in the study area is generally dominated by emissions from road vehicles. The quantity and composition of vehicle emissions is dependent on the type of fuel used, engine type, size and efficiency, vehicle speeds and the type of exhaust emissions abatement equipment employed. As such, it is anticipated that future pollutant concentrations would be reduced from baseline levels, as reflected in the predicted background concentrations provided by Defra, shown in Table 6-18.

6.7.53 An assessment of potential impacts from road traffic emissions associated with the Proposed Development on existing and future receptors, including committed developments that are expected to become operational in future years has not been undertaken, as discussed in section 6.8. As such, no receptors associated with committed developments have been assessed.

6.8 Assessment of likely significant effects

6.8.1 This section presents the assessment of likely significant effects on air quality and odour resulting from the construction, operation and decommissioning of the Proposed Development. The likely significant effects of the Proposed Development are identified, taking into account primary and tertiary mitigation. Following assessment the need for secondary mitigation is considered in section 6.9.

Construction effects

Impact 1: Construction dust and fine particulate matter

6.8.2 A qualitative assessment of construction dust and particulate matter emissions has been carried out in accordance with the latest IAQM guidance on the assessment of dust from demolition and construction [35]. Full details of the assessment methodology are provided in ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6).

6.8.3 The assessment consisted of four steps (Step 1, Step 2A, Step 2B and Step 2C), as outlined in the below sections.

6.8.4 The assessment of construction dust and fine particulate matter considered four areas in relation to the locations of the expected worst case construction works to ensure a worst case scenario is adopted for the assessment. The four areas considered were:

1. The WRP site.
2. Open-cut pipeline installation sections of the Proposed Development.
3. Temporary construction compounds E-1 and E-2, located at New Down Lane.
4. AGP BPT/IPS-E – located within the footprint of temporary construction compound E-1 at New Down Lane.

6.8.5 Details on the sensitivity of human and ecological feature receptors located within 250m and 200m of these areas respectively are detailed in Table 6-21~~Table 6-21~~.

Step 1: Screen the need for a detailed assessment

6.8.6 Human and ecological receptors are present within the screening distances presented in paragraph 6.5.30, therefore a detailed assessment is required.

Step 2A: Define the potential dust emission magnitude

6.8.7 The magnitude of potential dust emission has been assessed for demolition, earthworks, construction and trackout activities for each of the proposed areas stated in paragraph 6.8.4.

6.8.8 The worst case scenarios for human and ecological receptors were identified based on the sensitivity and number of receptors within 250m and 200m respectively of the Order Limits of the Proposed Development.

6.8.9 For trackout activities, receptors within 50m of the construction vehicle routes up to 250m from temporary construction compound site accesses have been considered, as this distance "*takes account of the exponential decline in both airborne concentrations and the rate of deposition with distance*" as detailed in the IAQM guidance [35].

6.8.10 The potential dust emission magnitude for the Proposed Development was determined using the criteria detailed in Table 1-1 of ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6), and determined from the worst case assumptions. The dust emission magnitudes for each location and activity are detailed in Table 6-20. Construction details have been provided by the Applicant.

Table 6-20 Dust emission magnitudes associated for each construction activity considered in the assessment

Construction activity	Dust emission magnitude	Location and rationale
Demolition	-	WRP site No existing buildings or structures to be demolished.
	Small	Open-cut pipeline installation sections A number of small structures have been identified as requiring demolition to allow pipeline construction. These comprise shed structures constructed of predominantly timber and steel (low potential for dust release). Total building volume estimated to be <12,000m^3.
	-	Temporary construction compounds E-1 and E-2 No existing buildings or structures to be demolished.
	-	AGP No existing buildings or structures to be demolished.
Earthworks	Large Total site area 18,000m^2 – 110,000m^2.	WRP site The WRP site area is approximately 64,000m^2. During piling works associated with the WRP site, there is the potential for >10 heavy earth moving vehicles to be active at one time.

Construction activity	Dust emission magnitude	Location and rationale
	>10 heavy earth moving vehicles active at one time.	
	Large Site area >110,000m^2. Dusty soil type. >10 heavy earth moving vehicles at one time.	Open-cut pipeline installation sections Total Order Limit area is greater than 110,000m^2. Clayey soils are present along the pipeline route [58]. There is the potential for >10 heavy earth moving vehicles to be active at any one time along the pipeline route.
	Large Total site area 18,000m^2 – 110,000m^2. >10 heavy earth moving vehicles active at one time	Temporary construction compounds E-1 and E-2 Combined total site area of construction compounds E-1 and E-2 approximately 74,000m^2. There is the potential for >10 heavy earth moving vehicles to be active at any one time.
	Medium Total site area <18,000m^2. 5-10 heavy earth moving vehicles active at one time.	AGP The AGP site would be approximately 10,600m^2. There is the potential for 5-10 heavy earth moving vehicles to be active at any one time.
Construction	Large Total building volume >75,000m^3. On-site concrete batching.	WRP site The maximum building volume of the WRP is approximately 283,400m^3. On-site concrete batching is assumed.
	Large >75,000m^3 of potentially dusty material.	Open-cut pipeline installation sections Pipe bedding (granular fill material) would be placed in the base of the trench (open-cut method) and would be dusty material.
	Medium Total building volume 12,000m^3-75,000m^3. Potentially dusty material (i.e. concrete).	Temporary construction compounds E-1 and E-2 The total building volume is expected to be approximately 62,000m^3.
	Medium Total building volume 12,000-75,000m^3. Potentially dusty material (i.e. concrete).	AGP Total building volume associated with BPT/IPS-E at temporary construction compound E-1 is expected to be approximately 62,000m^3 of potentially dusty construction material (i.e. concrete, brickwork).

Construction activity	Dust emission magnitude	Location and rationale
Trackout	Large >50 outward HDV movements per day. Unpaved road length >100m in length.	WRP site 79 outward HDV vehicle movements are expected*. There is the potential for the maximum unpaved road length to be approximately 460m.
	Large >50 HDV movements per day. Unpaved road length >100m in length.	Open-cut pipeline installation sections More than 50 HDV outward movements are expected at open-cut pipeline installation sections per day*. There is the potential for the maximum unpaved road length to be >100m across the pipeline.
	Small <20 HDV movements per day. Unpaved road length >100m in length.	Temporary construction compounds E-1 and E-2 A maximum of four outward HDV vehicle movements are expected at temporary construction compound E-1 and E-2 per day*. Based on temporary compound dimensions, there is the potential for unpaved road lengths to be >100m.
	Small <20 HDV movements per day. Unpaved road length >100m in length.	AGP A maximum of four outward HDV vehicle movements are expected*. Based on temporary compound dimensions, there is the potential for unpaved road lengths to be >100m.
*HDV outward movements per day have been estimated from HDV traffic flows presented in ES Appendix 6.2 Air quality assessment traffic data, Volume II (Document reference 6.2, DCO Volume 6), where the number of outward HDV movements per day is half the HDV (per day) flow.		

Step 2B: Define the sensitivity of the area

6.8.11 The sensitivity of the area to dust soiling, human health impacts and ecological impacts has been determined using the criteria in Table 1-2 within ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6). ES Figure 6.2 Air quality construction dust and fine particulate matter buffers, Volume III (Document reference 6.3, DCO Volume 6) shows the buffers from the Order Limits of the Proposed Development used in determining the sensitivity of the area. The sensitivity of the area takes into account the specific sensitivities of receptors in the area, proximity and number of those receptors and local background PM_{10} concentrations.

6.8.12 The sensitivities of the area to dust soiling, human health and ecological effects is detailed in Table 6-21~~Table 6-21~~.

Table 6-21 Defined sensitivity of receptors considered in the assessment

Construction activity	Sensitivity of the area	Location and rationale
Dust soiling and human health (worst case)		
Demolition/Earthworks/Construction	Dust soiling effects and human health impacts*: low	WRP site There are between one and ten high sensitivity receptors (e.g. residential dwellings along Mill Lane), located within 250m of the WRP site Order Limits. There are between one and ten medium sensitivity receptors (e.g. medium-term car park associated Basepoint Business Park, places of work), located within 50m of the WRP site Order Limits.
	Dust soiling effects: medium Human health impacts*: low	Open-cut pipeline installation sections There are between one and ten high sensitivity receptors (e.g. residential dwellings along Winchester Road) located within 20m of the open-cute pipeline installation sections.
	Dust soiling effects: medium Human health impacts*: low	Temporary construction compounds E-1 and E-2 There are between one and ten high sensitivity receptors (e.g. residential dwellings along Dell Close) located within 20m of temporary construction compounds E-1 and E-2.
	Dust soiling effects: medium Human health impacts*: low	AGP There are between one and ten high sensitivity receptors (e.g. residential dwellings along Dell Close) located within 20m of the AGP, which would be located within temporary construction compound E-1.
Trackout	Dust soiling effects and human health impacts*: low	WRP site There are between one and ten medium sensitivity receptors (e.g. medium-term car park associated with Basepoint Business Park, places of work), located within 50m of road links used by construction vehicles up to 250m from the WRP site access.
	Dust soiling effects: high Human health impacts*: low	Open-cut pipeline installation sections There are between ten and 100 high sensitivity receptors located within 20m of road links used by construction vehicles up to 250m from the open-cut pipeline installation sections access points (e.g. residential dwellings along Meyrick Road, West Street and Brockhampton Road).

Construction activity	Sensitivity of the area	Location and rationale
	Dust soiling effects and human health impacts*: low	Temporary construction compounds E-1 and E-2 There are between one and ten low sensitivity receptors (e.g. Portsdown Hill short stay car park, public footpath) located within 20m of the construction vehicle route up to 250m from temporary construction compounds E-1 and E-2, assuming construction traffic routes both east and west along Portsdown Hill Road.
	Dust soiling effects and human health impacts*: low	AGP There is more than one low sensitivity receptor (e.g. Portsdown Hill short stay car park, public footpath) located within 20m of the construction vehicle route up to 250m from the AGP temporary construction compound (E-1) site access on New Down Lane.
Ecological receptors (worst case)		
Demolition/Earthworks/Construction	Low	WRP site There are high sensitivity ecological receptors (the Chichester and Langstone Harbours SPA/Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI) within 200m of the WRP site.
	Medium	Open-cut pipeline installation sections There is a medium sensitivity ecological receptor (the River Meon SINC/Compensatory SAC) within 20m of open-cut pipeline installation sections. There is a low sensitivity ecological receptor (Fielders Farm Meadow (Eastleigh) SINC) within 20m of demolition works. A conservative approach has been taken and as such the sensitivity of the area has been defined as medium.
	Low	Temporary construction compounds E-1 and E-2 There is a medium sensitivity ecological receptor (Portsdown SSSI) located within 200m of temporary construction compounds E-1 and E-2.
	Low	AGP There is a medium sensitivity ecological receptor (Portsdown SSSI) located within 200m of the temporary construction compound E-1 where AGP is located.
Trackout	N/A	WRP site There are no sensitive ecological receptors located within 200m of the construction vehicle

Construction activity	Sensitivity of the area	Location and rationale
		route up to 250m from the WRP site access along Harts Farm Way.
	High	Open-cut pipeline installation sections There is a high sensitivity ecological receptor (the River Itchen SAC) located within 20m of the construction vehicle route up to 250m from the site access (i.e. temporary access from Highbridge Road (B3335) for temporary construction compound L-10).
	Low	Temporary construction compounds E-1 and E-2 There is a medium sensitivity ecological receptor (Portsdown SSSI) located within 200m of the construction vehicle routes up to 250m from the temporary construction compound access on New Down Lane.
	Low	AGP There is a medium sensitivity ecological receptor (Portsdown SSSI) located within 200m of the construction vehicle routes up to 250m from the AGP temporary construction compound access on New Down Lane. The AGP would be located within temporary construction compound E-1.
* The highest annual mean background PM_{10} concentration across the study area is less than 24 $\mu g.m^{-3}$ (see Table 6-18~~Table 6-18~~).		

Step 2C: Define the risk of impacts

6.8.13 The dust and PM emission magnitude (Step 2A) and sensitivity of receptors (Step 2B) are combined, and the risk of impacts determined (Step 2C) using the approach detailed within Table 1-6 and 1-7 of ES Appendix 6.1 Construction dust and fine particulate matter assessment methodology, Volume II (Document reference 6.2, DCO Volume 6). The risks for dust soiling, human health and ecological effects are shown in Table 6-22~~Table 6-22~~.

Table 6-22 Risk of impacts from construction activities

Potential impact	Worst case area assessed	Construction activity			
		Demolition	Earthworks	Construction	Trackout
Dust soiling effects	WRP site	-	Low risk	Low risk	Low risk
	Open-cut pipeline installation sections	Low risk	Medium risk	Medium risk	High risk

Potential impact	Worst case area assessed	Construction activity			
		Demolition	Earthworks	Construction	Trackout
	Temporary construction compounds E-1 and E-2	-	Medium risk	Medium risk	Negligible risk
	AGP	-	Medium risk	Medium risk	Negligible risk
Human health impacts	WRP site	-	Low risk	Low risk	Low risk
	Open-cut pipeline installation sections	Negligible risk	Low risk	Low risk	Low risk
	Temporary construction compounds E-1 and E-2	-	Low risk	Low risk	Negligible risk
	AGP	-	Low risk	Low risk	Negligible risk
Ecological effects	WRP site	-	Low risk	Low risk	N/A
	Open-cut pipeline installation sections	Low risk	Medium risk	Medium risk	High risk
	Temporary construction compounds E-1 and E-2	-	Low risk	Low risk	Negligible risk
	AGP	-	Low risk	Low risk	Negligible risk

6.8.14 Following the construction dust assessment, the worst case risk of impacts from worst case construction activities (in the absence of mitigation) is as follows:

1. High risk in relation to dust soiling impacts on people and property.
2. Low risk in relation to human health impacts.
3. High risk in relation to ecological impacts.

6.8.15 With the implementation of mitigation measures secured within the Outline CEMP (Document reference 7.1 DCO Volume 7), commensurate to the highest level of risk detailed above, the effect of construction dust and fine particulate matter emissions from the Proposed Development is considered to be not significant.

6.8.16 Measures targeted at construction dust and fine particulate matter emissions will also reduce $PM_{2.5}$, resulting in a consequential beneficial reduction in exposure to $PM_{2.5}$ during construction.

Impact 2: Construction Non-Road Mobile Machinery emissions assessment

6.8.17 Defra technical guidance [34] states that emissions from NRMM used on construction sites are not likely to have a significant effect on local air quality where relevant control and management measures are employed, and that a qualitative assessment is sufficient for consideration of effects. As discussed in paragraph 6.5.43, NRMM control measures will be implemented as embedded tertiary mitigation. Therefore, a qualitative assessment of NRMM that would be used during construction of the Proposed Development has been undertaken where effects on receptors may occur. This qualitative assessment takes into account:

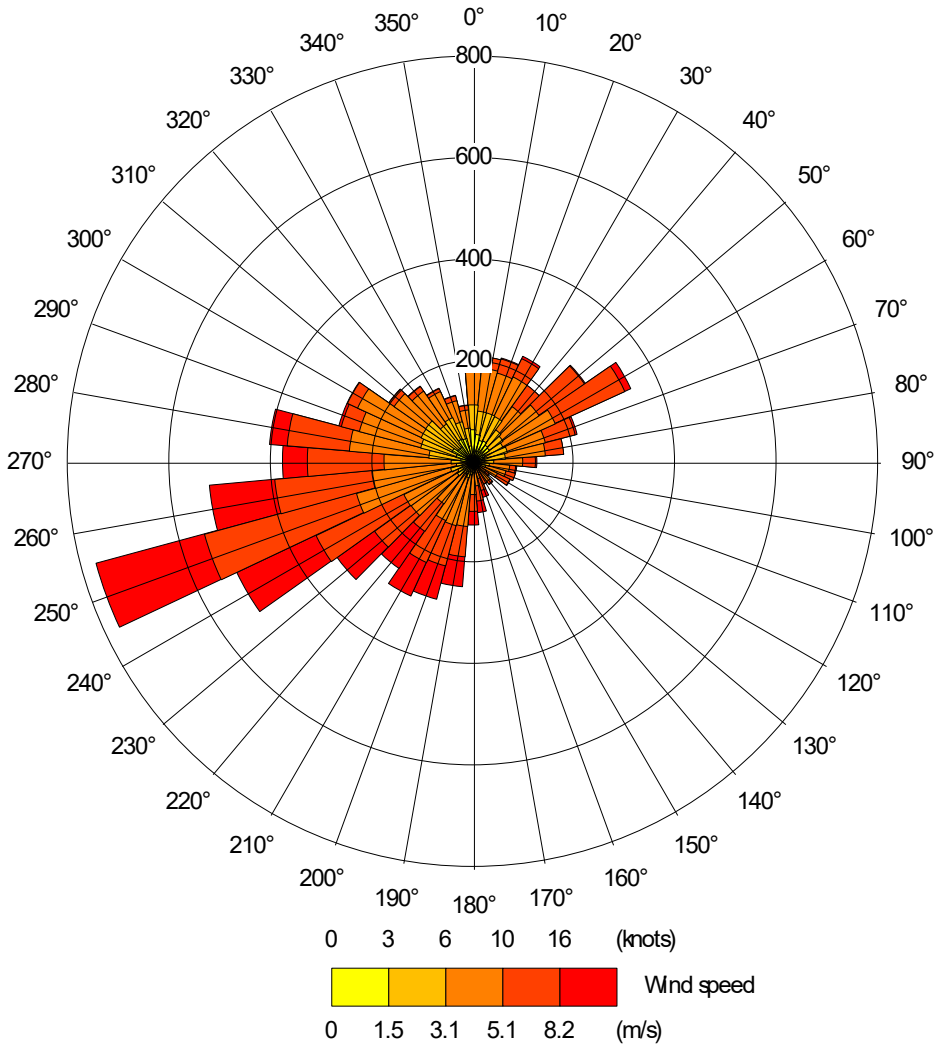
1. The working hours to be employed and the duration of works.
2. Existing air quality conditions in the area (based on Defra background pollutant concentration maps [49]).
3. Prevailing meteorological conditions (see Graphic 6-1~~Graphic 6-1~~).
4. The numbers and type of plant to be used.
5. Distances from NRMM activity to the nearest receptors.

6.8.18 The anticipated working hours for construction of the Proposed Development is 07:00 to 19:00 in the summer and 07:00 to 17:30 in the winter Monday to Friday and 07:00 to 17:00 on Saturday. When required (e.g. abnormal loads), works outside these typical working hours or overnight (including Sundays and bank holidays) may be required in some locations. Such works may include some trenchless construction works. In line with the Outline CEMP (Document reference 7.1, DCO Volume 7), the relevant local planning authorities will be notified of works outside core hours.

6.8.19 The area covered by the Order Limits is largely rural in nature and, as shown in Table 6-18, maximum Defra predicted background pollutant concentrations of NO_2, PM_{10} and $PM_{2.5}$ are 'well below' (i.e. less than 75% of the annual mean AQOs).

6.8.20 Graphic 6-1~~Graphic 6-1~~ shows the wind rose for data recorded at the Thorney Island meteorological station in 2023, which is located approximately 6.2km to the south-east of the Order Limits at its nearest point.

Graphic 6-1 Thorney Island Meteorological Station Wind Rose (2023)



Construction Non-Road Mobile Machinery at the Water Recycling Plant site

6.8.21 Intensive construction activities are expected, such as those associated with the construction of the WRP site and tunnel launch shaft. NRMM emissions associated with the construction of the WRP site are likely to be more intermittent in nature due to the certain works lasting set periods of time and are likely to only occur during core working hours (see paragraph 6.8.18). Table 6-23 provides the maximum number of NRMM proposed to be operating at any point during construction activities associated with the WRP site.

6.8.22 The closest residential receptors to the WRP site are located approximately 170m north along Mill Lane. It is considered that this distance would provide sufficient dilution and dispersion of pollutant emissions from NRMM associated with construction of the WRP site and tunnel launch shaft. Furthermore, the maximum annual mean background concentrations across the study area are 'well below' (i.e. less than 75% of the AQO), as presented in Table 6-18. Therefore, it is considered highly unlikely that NRMM emissions would result in an exceedance of the relevant AQOs.

6.8.23 The Basepoint Business Park is located 35m east of the Order Limits. However, given the maximum predicted background concentrations across the study area, it is not considered likely that NRMM emissions would result in exceedances of the short-term AQOs.

6.8.24 The closest ecological receptors to the WRP site temporary construction compound are the Chichester and Langstone Harbours SPA and Ramsar Site, Langstone Harbours SSSI, and the Solent Maritime SAC, approximately 170m south of the WRP site temporary construction compound. As shown in Graphic 6-1~~Graphic 6-1~~, the prevailing wind direction is from the south-west. Therefore, emissions from NRMM would be dispersed away from these sites for the majority of the time.

6.8.25 It is noted that there is the possibility that emissions could be dispersed towards the Chichester and Langstone Harbours SPA and Ramsar Site, Langstone Harbours SSSI, and Solent Maritime SAC under conditions when the wind has a northerly component (i.e. not from the prevailing direction). Whilst this may occur, winds with a northerly component are not the most predominant or most common wind direction as can be seen in Graphic 6-1~~Graphic 6-1~~.

Table 6-23 Construction Non-Road Mobile Machinery – Water Recycling Plant site construction

Equipment	Enabling works	Piling works	Pile caps and foundations	Buried utilities/Civils' works	Steel frame buildings and cladding install	Site-wide MEICA install	Site roads and reinstatement works
Compressor	-	32	2	4	2	2	2
Concrete Truck/Mixer/Truck Mounted Pump	-	8	2	-	-	-	1
Crawler	-	1	-	-	-	-	-
Crawler Crane	-	1	3	-	1	1	-
Diesel Generator	-	-	6	5	2	2	2
Dozer	5	-	-	-	-	-	-
Excavator	4	12	2	4	-	-	4
MEWP	-	-	-	-	6	6	-
Mobile Crane	-	-	-	-	2	2	-
Piling Rig	-	4	-	2	-	-	-
Power Tools (e.g. cutters, circular saw)	-	4	14	2	4	4	16
Roller	5	4	-	1	-	-	1
Spoil Wagon/Dump Truck	10	32	10	14	10	10	14
Telescopic Handler	-	4	2	2	1	1	1

Non-Road Mobile Machinery along the Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works

6.8.26 The primary construction activities which are expected to occur along the Pipeline between the WRP site and Otterbourne WSW include, but are not limited to:

1. Temporary works to support construction including temporary construction compounds, water storage lagoons and temporary access to construction areas.
2. Above-ground pipeline construction.
3. Permanent works to support operation and maintenance such as permanent access to the AGP.
4. Isolation, washout and air valves along the length of the pipelines.
5. Highway works and Public Rights of Way (PRoW) diversions where required.
6. Landscaping and environmental mitigation, enhancement, and compensation measures.

6.8.27 Sections of trenchless construction works and tunnelling are also proposed to avoid sensitive locations such as watercourse and roads. As construction works on the Pipeline would be undertaken in sections in a linear nature, NRMM would only be operational in the vicinity of a receptor for a relatively short duration, and not for the full duration of the construction programme. Table 6-24~~Table 6-24~~ provides the maximum number of NRMM proposed to be operating at any point during construction activities associated with the Pipeline route

6.8.28 The location of maximum NRMM impact along the Pipeline route was determined to be temporary construction compounds at Widley Farm, to the north of Portsdown Hill Road (temporary construction compound E-1 and E-2). Temporary construction compound E-1 has been determined to be the location of the most intensive construction activities along the Pipeline route and has the greatest number of receptors downwind in close proximity to the Order Limits. The close proximity to receptors of temporary construction compound E-2 and associated NRMM at this sectional site compound is expected to contribute to the maximum NRMM impact in this area.

6.8.29 The closest human receptors to temporary construction compound E-1 are located approximately 15m to the east, with approximately 150 residential dwellings within 200m of the Order Limits. As shown in Graphic 6-1~~Graphic 6-1~~, the prevailing wind direction is from the south-west. Notwithstanding this, the maximum pollutant background concentrations for the study area are 'well below' (i.e. less than 75% of the relevant AQOs) and as such it is not considered likely that NRMM emissions would result in exceedances of the relevant AQOs. Furthermore, activities at temporary construction compound E-1 associated with construction of the AGP (BPT/IPS-E) are expected to be temporary in nature, occurring for approximately 370 days in total. Once construction of the infrastructure at this plant is complete, no pollution sources would be present.

6.8.30 In order to provide a conservative assessment, it has been assumed that NRMM would be in operation up to the boundary of the Order Limits. In reality, it is likely that NRMM would be operating in locations set back from the Order Limits, thus increasing the pathway between potential NRMM emission sources and sensitive

receptors, aligning with control and management measures secured within the Outline CEMP (see paragraph 6.5.43) (Document reference 7.1, DCO Volume 7).

Table 6-24 Temporary construction compound E-1 and E-2

Equipment	Site Clearance, Enabling Works and Groundworks	Construction of shafts	External Works	Mechanical and Electrical Installation	Recover TBM	Reinforced Concrete Works and Steel Framed Structures	Shaft Dewatering	Tunnelling
Compressor	-	-	-	-	-	1	-	-
Concrete Truck/Mixer/Truck Mounted Pump	-	1	1	-	-	1	-	1
Crawler	-	2	-	-	-	-	-	-
Dewatering Pump	-	1	-	-	-	-	1	-
Diesel Generator	-	1	1	1	-	1	1	1
Excavator	2	2	3	-	2	-	-	-
Hydraulic Hammer Rig	1	-	-	-	-	-	-	-
Loader	1	-	-	-	-	1	-	-
MEWP	-	-	-	1	-	1	-	-
Mobile Crane	-	-	-	1	1	1	-	-
Piling Rig	-	2	-	-	-	-	-	-
Power Tools (e.g. cutters, circular saw)	-	-	-	1	-	4	-	-
Roller	-	-	2	-	-	-	-	-
Spoil Wagon/Dump Truck	-	1	2	-	1	-	-	-
Sweeper	-	-	1	-	-	-	-	-
Telescopic Handler	-	1	1	-	-	-	-	-

Significance of effect

6.8.31 Defra technical guidance [34] states that emissions from NRMM used on construction sites are not likely to have a significant effect on local air quality where relevant controls and management measures are employed, and a qualitative assessment is sufficient for consideration of effects. The result of the qualitative assessment above demonstrates that intensive construction activities are unlikely to have a significant impact on local air quality with the implementation of the primary and tertiary mitigation measures detailed in section 6.4.

6.8.32 Given the distance from the temporary construction compound, and the prevailing wind direction, it is considered there would be sufficient dilution and dispersion of pollutant emissions from NRMM. Based on professional judgment, this means that effects are likely to be not significant.

Impact 3: Construction odour emissions

Source odour potential

6.8.33 It is understood that approximately 64,370m^3 of material is to be excavated as part of the earthworks associated with the construction of the WRP site. The composition of waste in the historic landfill site at the WRP site is understood to be predominantly inert material, consisting of glass, paper, wood, plastic, metal, brick, concrete, rubber, ceramics, ash, sponge and occasional fabric and organic material associated with household waste.

6.8.34 It is understood that materials deposited as landfill date from the 1960s to 1980s. As such, any organic material is likely to have largely decomposed. Furthermore, it is understood that the landfill does not have an engineered cap or liner, and therefore it is likely that gases produced by the decomposition of any organic components of the waste will have, to some extent, diffused out into the atmosphere over time. Notwithstanding this, it is understood that the historic landfill site is still producing landfill gas. Olfactory evidence presented within ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6) states a range of odours were observed from the landfill material across the WRP site as detailed in paragraph 6.7.23.

6.8.35 The duration associated with excavation of material for shaft construction is expected to be 11 months. The duration of CFA piling for WRP site foundations is expected to be 19 months. As such, any odour releases from the excavated material are expected to be short-term, temporary and would only occur during these periods. The excavated material is not expected to be re-used on site for infill applications and therefore would be taken off-site. As such, the source odour potential associated with the excavated landfill material is classified as medium.

Pathway effectiveness

6.8.36 As shown in Graphic 6-1~~Graphic 6-1~~, the prevailing wind direction is from the south-west. There are commercial receptors associated with Basepoint Business Park located downwind (35m east) as well as residential receptors located to the north (170m). The process is considered to be open with low-level release (i.e. ground level).

6.8.37 As such, the pathway is considered to be highly effective in relation to receptors within the Basepoint Business Park and moderately effective for residential receptors along Mill Lane.

Receptor sensitivity

6.8.38 Receptors associated with Basepoint Business Park are considered to be medium sensitivity (i.e. places of work). Receptors located along Mill Lane are considered to be high sensitivity (i.e. residential dwellings).

Risk of odour exposure

6.8.39 In accordance with the IAQM guidance, the risk of odour exposure in relation to commercial receptors within Basepoint Business Park is considered to be medium risk. The risk of odour exposure in relation to the residential dwellings along Mill Lane is considered to be low risk.

Significance effect

6.8.40 In accordance with the IAQM guidance the likely magnitude of odour effect as a result of excavation of the historic landfill site during the construction of the WRP site is considered to be slight adverse for both the commercial receptors at Basepoint Business Park and the residential dwellings along Mill Lane. As such, odour effects on human receptors are considered not significant in terms of EIA regulations.

Impact 4: Construction road traffic emissions assessment

Human receptors

6.8.41 Construction phase road traffic flows presented in Table 1-1 within ES Appendix 6.2 Air quality assessment traffic data, Volume II (Document reference 6.2, DCO Volume 6), have been compared against the indicative IAQM and EPUK screening criteria presented in Table 6-14.

6.8.42 As presented in Table 2-2 within ES Appendix 6.2 Air quality assessment traffic data, Volume II (Document reference 6.2, DCO Volume 6), Link 17 (Harts Farm Way) is in exceedance of the IAQM and EPUK traffic screening criteria for locations outside an AQMA for LDVs and HDVs.

6.8.43 It should be noted that the IAQM and EPUK criteria should be treated as indicative. An exceedance of the screening criteria does not automatically lead to the requirement for a detailed assessment (i.e. dispersion modelling). The criteria is intended to function as a sensitive trigger to identify when additional assessment is required in cases where there is a possibility of a significant effect arising on local air quality. The criteria should not be applied rigidly and, in some instances, it may be appropriate to amend them on the basis of professional judgement - bearing in mind that the objective is to identify situations where there is a likelihood of a significant effect on local air quality.

6.8.44 Based on a desk review, there are no relevant human receptors within 200m of Link 17 (Harts Farm Way) and as such, no further consideration is required.

6.8.45 It is noted that two road links (Link 71 and Link 72) along the M3 motorway (between J10-J12) also exceed the IAQM and EPUK criteria. These road links are outside of the scope of the traffic study area and were provided on a supplementary basis, to facilitate a robust assessment of construction phase road traffic emissions on ecological receptors.

6.8.46 As presented in Table 6-19~~Table 6-19~~, NO_2 concentrations from EBC diffusion tube monitoring within the recently revoked Eastleigh AQMA No.2 M3 (EBC monitoring location PC) are well within, and therefore meet, the annual mean NO_2 AQO. This AQMA has been revoked following more than five years of compliance with the annual mean NO_2 AQO, as well as a decreasing trend in annual mean NO_2 concentrations for the period 2019-2023 [57]. As such, only HDVs would be above the IAQM and EPUK criteria. Based on the monitored concentrations and set back distance of >35m to locations of relevant exposure an impact worse than negligible is unlikely to occur.

6.8.47 In accordance with the IAQM and EPUK guidance, the effect of construction-generated traffic emissions of NO_2, PM_{10} and $PM_{2.5}$ at human receptors is not significant in terms of EIA Regulations.

Ecological receptors

Critical Levels

6.8.48 Table 6-25~~Table 6-25~~ and Table 6-26~~Table 6-26~~ present the potential contribution of the Proposed Development alone ('Do Something' minus 'Do Minimum') and cumulatively ('Do Something' minus 'Do Nothing') with other committed developments, plans and projects, on the sensitive ecological receptors within the air quality study area in relation to NOx and NH_3. Values that exceed 1% of the Critical Level (i.e. those which cannot be considered to be insignificant) are shown in bold. Where transects have multiple receptors in exceedance of 1% of the Critical Level, only the nearest receptor to the affected road link has been presented in Table 6-25~~Table 6-25~~ and Table 6-26~~Table 6-26~~.

6.8.49 Predicted total pollutant concentrations (including the relevant background pollutant concentrations) at the ecological receptor locations (cumulatively, to present worst case) are detailed in Table 6-25~~Table 6-25~~ and Table 6-26~~Table 6-26~~. Values that exceed 100% of the Critical Level are shown in bold. Full results for each ecological receptor transect are detailed in ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transects results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6) and ES Appendix 6.6 Construction road vehicle exhaust emissions assessment – ecological features transects results – ammonia, Volume II (Document reference 6.2, DCO Volume 6).

Table 6-25 Maximum contribution of Proposed Development generated nitrogen oxides Critical Level results

Ecological feature	Designation	Transect ID and distance from road link	Maximum NO_X contribution				Total NOx concentration including background	
			Change in NO_X concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	% of CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Proposed Development alone contribution	Proposed Development and cumulative		
Eastleigh Borough Council								
Pitmore Copse (west)	AW	AW 1489875_1_8.5m	0.18	0.69	0.59%	2.30%	10.52	35.06%
Fielders Farm Meadows (Winchester)	SINC	SINC WC0682_1_3.1m	0.28	3.68	0.93%	12.28%	13.96	46.52%
Pitmore Copse	AW	AW 1488025_1_27m	0.22	0.63	0.75%	2.10%	12.03	40.08%
Crowdhill Copse	SINC	SINC EA0089_1_62.1m	0.03	0.39	0.09%	1.29%	11.12	37.06%
Pitmore Copse (west)	AW	AW 1489875_2_15.8m	0.10	0.38	0.34%	1.27%	11.78	39.26%
Gore Copse	SINC	SINC EA0110_1_9.7m	0.06	3.10	0.21%	10.32%	14.32	47.73%
Knowle Lane Open Space	SINC	SINC EA0116_1_85.2m	0.02	0.65	0.06%	2.18%	10.76	35.86%
River Itchen	SSSI	SSSI SU476240_1_0.2m	0.16	8.22	0.54%	27.40%	20.68	68.94%
Ashtrim Nurseries	SINC	SINC EA0137_1_4.5m	0.09	4.69	0.31%	15.62%	17.15	57.17%
Swamp West of Recreation Grounds	SINC	SINC EA0028_1_0.4m	0.16	8.16	0.52%	27.20%	20.62	68.74%
Stoke Park Wood	SINC	SINC EA0073_1_19.1m	0.04	1.83	0.13%	6.09%	13.12	43.74%
Fielders Farm Meadows (Eastleigh)	SINC	SINC EA0097_1_0m	0.42	5.30	1.40%	17.66%	15.57	51.90%
The Mount, Fair Oak and Horton Heath	SINC	SINC EA0098_1_164m	0.13	0.35	0.42%	1.16%	9.95	33.17%
River Itchen	SAC	SAC UK0012599_1_0m	0.16	8.54	0.54%	28.47%	21.00	70.01%
Havant Borough Council								
Fort Purbrook Paddock 1 (Havant)	SINC	SINC HV0006_1_73m	0.02	0.30	0.08%	1.01%	13.84	46.12%
Fields off Havant Road	SINC	SINC HV0027_1_3.1m	0.10	2.07	0.33%	6.89%	17.46	58.21%
Portsmouth Golf Course West	SINC	SINC HV0002_1_80m	0.03	0.32	0.09%	1.06%	13.82	46.07%
Fort Purbrook	SINC	SINC HV0003_1_75.8m	0.03	0.32	0.09%	1.05%	13.82	46.06%
Portsmouth City Council								
Fort Widley and Surrounds	SINC	SINC PO0002_1_5.9m	0.06	2.13	0.19%	7.10%	17.64	58.81%

Ecological feature	Designation	Transect ID and distance from road link	Maximum NO_X contribution				Total NOx concentration including background	
			Change in NO_X concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	% of CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Proposed Development alone contribution	Proposed Development and cumulative		
Meadow west of Farlington Avenue	SINC	SINC PO0006_1_3.9m	0.23	2.75	0.77%	9.17%	16.25	54.18%
Land to the north of Portsdown Hill Road	SINC	SINC PO0009_1_4m	0.08	1.56	0.26%	5.21%	15.10	50.33%
East and West of Gillman Road	SINC	SINC PO0019_1_3.2m	0.09	1.85	0.31%	6.18%	15.39	51.30%
Land to the South of Portsdown Hill Road	SINC	SINC PO004_1_2.3m	0.40	6.26	1.33%	20.87%	20.34	67.79%
Field to West of Gillman Road	SINC	SINC PO0025_1_3m	0.26	3.06	0.86%	10.20%	16.56	55.21%
Birkdale Avenue	SINC	SINC PO0029_1_4.8m	0.21	2.52	0.71%	8.39%	16.02	53.40%
Portsdown	SSSI	SSSI SU640065_1_0.7m	0.12	4.57	0.40%	15.23%	18.64	62.14%
Land to the north of Portsdown Hill Road	SINC	SINC PO00009_2_3.5m	0.09	1.81	0.30%	6.02%	15.34	51.14%
Farlington Avenue	SINC	SINC PO0026_1_61.2m	0.03	0.41	0.12%	1.38%	13.92	46.39%
James Callaghan Drive	SINC	SINC PO0021_1_0m	0.11	4.65	0.38%	15.49%	17.59	58.62%
Winchester City Council								
Unnamed Ancient Woodland east of Cranbourne Drive	AW	AW 1488547_1_11m	0.36	1.79	1.20%	5.97%	10.80	36.00%
Unnamed Ancient Woodland west of Otterbourne Transfer Plant	AW	AW 1489079_1_0m	0.50	2.52	1.68%	8.40%	11.53	38.43%
Blacknell's Copse	AW	AW 1490902_1_71m	0.03	0.44	0.09%	1.47%	9.93	33.11%
Great Moorlands Copse Complex	SINC	SINC WC0050_1_5.6m	0.34	1.58	1.13%	5.28%	11.41	38.04%
Colden Common Wood	AW	AW 149852_1_27.3m	0.05	0.86	0.15%	2.88%	10.35	34.51%
Colden Common Wood & Blacknells Copse	SINC	SINC WC0095_1_0m	0.19	4.28	0.64%	14.28%	13.77	45.91%
Freemantles/Gt. Moorlands	AW	AW 1488462_1_4.5m	0.34	1.70	1.14%	5.67%	10.71	35.71%
River Itchen	SAC	SAC SU475240_1_0m	0.55	3.51	1.84%	11.69%	12.65	42.18%
River Itchen	SSSI	SSSI SU476240_2_0m	0.75	4.30	2.51%	14.32%	13.44	44.81%
Otterbourne Primary School Meadow	SINC	SINC WC0062_1_164.5m	0.07	0.31	0.22%	1.04%	10.14	33.79%

Ecological feature	Designation	Transect ID and distance from road link	Maximum NO_X contribution				Total NOx concentration including background	
			Change in NO_X concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	% of CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Proposed Development alone contribution	Proposed Development and cumulative		
Colden Common Meadow & Woodland	SINC	SINC WC0089_1_9.7m	0.10	2.03	0.32%	6.76%	11.52	38.39%
Durnford's Yard Meadow	SINC	SINC WC0082_1_186m	0.02	0.34	0.08%	1.14%	9.35	31.18%
Great Moorlands Copse Complex	SINC	SINC WC0050_2_17.6m	0.31	1.52	1.02%	5.05%	11.34	37.81%
Alma Meadows (North)	SINC	SINC WC0160_1_6.7m	0.07	0.63	0.24%	2.09%	9.85	32.84%
Motte & Bailey & Chalk Pit	SINC	SINC WC0577_1_2.2m	0.10	3.17	0.32%	10.58%	13.76	45.88%
Blacknell's Copse Paddock	SINC	SINC WC0092_1_1.7m	0.16	3.62	0.53%	12.08%	13.11	43.71%
Hockley Golf Course	SINC	SINC WC0087_1_3.6m	0.39	1.67	1.29%	5.58%	10.82	36.07%
Lower Upham Meadow	SINC	SINC WC0159_1_6.8m	0.07	0.49	0.22%	1.65%	9.72	32.40%
Temple Usk Meadow	SINC	SINC WC0084_1_74.4m	0.03	0.42	0.09%	1.38%	9.43	31.43%
Church of The Holy Trinity	SINC	SINC WC0088_1_3.2m	0.14	3.19	0.48%	10.63%	12.68	42.26%
Shawford Down	SINC	SINC WC0072_1_0.9m	0.29	1.28	0.97%	4.27%	9.92	33.06%
Long Mead	SINC	SINC WC0055_1_79.8m	0.11	0.56	0.38%	1.85%	10.38	34.61%
St. Catherine's Hill	SSSI	SSSI SU485274_1_0m	0.51	2.62	1.69%	8.74%	11.20	37.33%
St. Catherine's Hill	SSSI	SSSI SU485274_2_0m	0.74	3.82	2.46%	12.73%	12.40	41.32%
Otterbourne Hill Common	SINC	SINC WC0054_1_32m	0.22	1.05	0.72%	3.50%	10.88	36.25%
Taylor's Copse	SINC	SINC WC0083_1_112.7m	0.02	0.30	0.08%	1.01%	9.32	31.05%
Hockley Golf Course	SINC	SINC WC0087_2_12.7m	0.17	1.86	0.57%	6.19%	11.00	36.68%
Castle/Woodend Copses	AW	AW 1488208_1_61m	0.09	0.41	0.28%	1.35%	10.23	34.11%
Colden Common Meadow & Woodland	SINC	SINC WC0089_2_4m	0.13	2.96	0.44%	9.86%	12.45	41.50%
River Itchen	SAC	SAC SU475240_2_0m	0.74	4.07	2.45%	13.55%	13.21	44.04%
River Itchen	SSSI	SSSI SU476240_2_55m	0.07	0.54	0.24%	1.82%	9.69	32.31%

Table 6-26 Maximum contribution of Proposed Development generated NH_3 Critical Level results

Ecological feature	Designation	Transect ID and distance from road link	Maximum NH_3 Contribution						Total NH_3 concentration including background		
			Change in NH_3 concentration ($\mu g.m^{-3}$)		Proposed Development Alone change as % of CLe		Proposed Development and cumulative change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	as % of Lower CLe	as % of Upper CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLe	Upper CLe	Lower CLe	Upper CLe			
Eastleigh Borough Council											
Pitmore Copse (west)	AW	AW 1489875_1_8.5m	0.01	0.03	**1.01%**	0.34%	**2.79%**	0.93%	1.23	**122.79%**	40.93%
Fielders Farm Meadows (Winchester)	SINC	SINC WC0682_1_3.1m	0.01	0.19	**1.17%**	0.39%	**18.90%**	**6.30%**	1.32	**131.90%**	43.97%
Hill Copse	AW	AW 1488698_1_89m	<0.01	0.01	0.13%	0.04%	**1.30%**	0.43%	1.14	**114.30%**	38.10%
Pitmore Copse	AW	AW 1488025_1_27m	0.01	0.03	**1.13%**	0.38%	**2.62%**	0.87%	1.26	**125.62%**	41.87%
Crowdhill Copse	SINC	SINC EA0089_1_62.1m	<0.01	0.02	0.12%	0.04%	**1.80%**	0.60%	1.11	**110.80%**	36.93%
Chestnut Gully Wood	SINC	SINC EA0102_1_190m	<0.01	0.01	0.09%	0.03%	**1.08%**	0.36%	1.16	**116.08%**	38.69%
Pitmore Copse (west)	AW	AW 1489875_2_15.8m	0.01	0.02	0.58%	0.19%	**1.56%**	0.52%	1.25	**124.56%**	41.52%
Gore Copse	SINC	SINC EA0110_1_9.7m	<0.01	0.14	0.31%	0.10%	**14.48%**	**4.83%**	1.19	**119.48%**	39.83%
Knowle Lane Open Space	SINC	SINC EA0116_1_85.2m	<0.01	0.03	0.08%	0.03%	**3.07%**	**1.02%**	1.09	**109.07%**	36.36%
River Itchen	SSSI	SSSI SU476240_1_0.2m	0.01	0.35	0.74%	0.25%	**35.24%**	**11.75%**	1.48	**148.24%**	49.41%
Ashtrim Nurseries	SINC	SINC EA0137_1_4.5m	<0.01	0.20	0.43%	0.14%	**20.09%**	**6.70%**	1.33	**133.09%**	44.36%
Swamp West of Recreation Grounds	SINC	SINC EA0028_1_0.4m	0.01	0.31	0.65%	0.22%	**30.94%**	**10.31%**	1.44	**143.94%**	47.98%
Stoke Park Wood	SINC	SINC EA0073_1_19.1m	<0.01	0.08	0.18%	0.06%	**7.85%**	**2.62%**	1.13	**112.85%**	37.62%
Fielders Farm Meadows (Eastleigh)	SINC	SINC EA0097_1_0m	0.02	0.27	**1.75%**	0.58%	**27.18%**	**9.06%**	1.40	**140.18%**	46.73%
The Mount, Fair Oak and Horton Heath	SINC	SINC EA0098_1_164m	<0.01	0.01	0.39%	0.13%	**1.50%**	0.50%	1.16	**116.50%**	38.83%
River Itchen	SAC	SAC UK0012599_1_0m	0.01	0.32	0.68%	0.23%	**32.28%**	**10.76%**	1.45	**145.28%**	48.43%
Havant Borough Council											
Fort Purbrook Paddock 1 (Havant)	SINC	SINC HV0006_1_73m	<0.01	0.02	0.12%	0.04%	**1.52%**	0.51%	0.92	91.52%	30.51%
Fields off Havant Road	SINC	SINC HV0027_1_3.1m	<0.01	0.10	0.41%	0.14%	**9.60%**	**3.20%**	0.98	97.60%	32.53%

Ecological feature	Designation	Transect ID and distance from road link	Maximum NH_3 Contribution						Total NH_3 concentration including background		
			Change in NH_3 concentration ($\mu g.m^{-3}$)		Proposed Development Alone change as % of CLe		Proposed Development and cumulative change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	as % of Lower CLe	as % of Upper CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLe	Upper CLe	Lower CLe	Upper CLe			
Portsmouth Golf Course West	SINC	SINC HV0002_1_80m	<0.01	0.02	0.13%	0.04%	**1.61%**	0.54%	0.97	96.61%	32.20%
Fort Purbrook	SINC	SINC HV0003_1_75.8m	<0.01	0.02	0.12%	0.04%	**1.59%**	0.53%	0.97	96.59%	32.20%
Fort Purbrook Paddock 3 (Havant)	SINC	SINC HV0143_1_75.3m	<0.01	0.01	0.06%	0.02%	**1.11%**	0.37%	0.91	91.11%	30.37%
Portsmouth City Council											
Fort Widley and Surrounds	SINC	SINC PO0002_1_5.9m	<0.01	0.11	0.29%	0.10%	**11.31%**	**3.77%**	1.11	**111.31%**	37.10%
Meadow west of Farlington Avenue	SINC	SINC PO0006_1_3.9m	0.01	0.14	**1.11%**	0.37%	**13.98%**	**4.66%**	1.09	**108.98%**	36.33%
Land to the north of Portsdown Hill Road	SINC	SINC PO0009_1_4m	<0.01	0.08	0.34%	0.11%	**7.83%**	**2.61%**	0.98	97.83%	32.61%
East and West of Gillman Road	SINC	SINC PO0019_1_3.2m	<0.01	0.09	0.40%	0.13%	**9.28%**	**3.09%**	0.99	99.28%	33.09%
Land to the South of Portsdown Hill Road	SINC	SINC PO004_1_2.3m	0.02	0.31	**1.91%**	0.64%	**30.62%**	**10.21%**	1.30	**129.62%**	43.21%
Field to West of Gillman Road	SINC	SINC PO0025_1_3m	0.01	0.16	**1.24%**	0.41%	**15.57%**	**5.19%**	1.11	**110.57%**	36.86%
Birkdale Avenue	SINC	SINC PO0029_1_4.8m	0.01	0.13	**1.02%**	0.34%	**12.80%**	**4.27%**	1.08	**107.80%**	35.93%
Portsdown	SSSI	SSSI SU640065_1_0.7m	0.01	0.24	0.61%	0.20%	**24.29%**	**8.10%**	1.23	**123.29%**	41.10%
Fort Purbrook Paddock 2 (Havant)	SINC	SINC HV0007_1_75.5m	<0.01	0.01	0.07%	0.02%	**1.15%**	0.38%	0.91	91.15%	30.38%
Fort Purbrook Paddock 4 (Havant)	SINC	SINC HV0142_1_74.9m	<0.01	0.01	0.06%	0.02%	**1.07%**	0.36%	0.91	91.07%	30.36%
Field East of Farlington Redoubt (North)	SINC	SINC HV0014_1_76.3m	<0.01	0.01	0.05%	0.02%	**1.02%**	0.34%	0.91	91.02%	30.34%
Land to the north of Portsdown Hill Road	SINC	SINC PO00009_2_3.5m	<0.01	0.09	0.39%	0.13%	**9.04%**	**3.01%**	0.99	99.04%	33.01%
Farlington Avenue	SINC	SINC PO0026_1_61.2m	<0.01	0.02	0.16%	0.05%	**2.09%**	0.70%	0.97	97.09%	32.36%
James Callaghan Drive	SINC	SINC PO0021_1_0m	0.01	0.24	0.58%	0.19%	**24.18%**	**8.06%**	1.24	**124.18%**	41.39%
Winchester City Council											

Ecological feature	Designation	Transect ID and distance from road link	Maximum NH_3 Contribution						Total NH_3 concentration including background		
			Change in NH_3 concentration ($\mu g.m^{-3}$)		Proposed Development Alone change as % of CLe		Proposed Development and cumulative change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	as % of Lower CLe	as % of Upper CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLe	Upper CLe	Lower CLe	Upper CLe			
Unnamed Ancient Woodland east of Cranbourne Drive	AW	AW 1488547_1_11m	0.03	0.07	**2.54%**	0.85%	**7.45%**	**2.48%**	1.25	**125.45%**	41.82%
Unnamed Ancient Woodland west of Otterbourne Transfer Plant	AW	AW 1489079_1_0m	0.04	0.10	**3.58%**	**1.19%**	**10.48%**	**3.49%**	1.28	**128.48%**	42.83%
Stratton's Copse	AW	AW 1490813_1_180m	<0.01	0.01	0.08%	0.03%	0.94%	0.31%	1.18	**117.94%**	39.31%
Blacknell's Copse	AW	AW 1490902_1_71m	<0.01	0.02	0.13%	0.04%	**2.04%**	0.68%	1.19	**119.04%**	39.68%
Great Moorlands Copse Complex	SINC	SINC WC0050_1_5.6m	0.02	0.07	**2.28%**	0.76%	**6.55%**	**2.18%**	1.27	**126.55%**	42.18%
Colden Common Wood	AW	AW 149852_1_27.3m	<0.01	0.04	0.22%	0.07%	**4.36%**	**1.45%**	1.21	**121.36%**	40.45%
Colden Common Wood & Blacknells Copse	SINC	SINC WC0095_1_0m	0.01	0.22	0.92%	0.31%	**21.86%**	**7.29%**	1.39	**138.86%**	46.29%
Fisher's Pond Wood	AW	AW 1490836_1_154m	<0.01	0.01	0.10%	0.03%	**1.14%**	0.38%	1.18	**118.14%**	39.38%
Freemantles/Gt. Moorlands	AW	AW 1488462_1_4.5m	0.02	0.07	**2.41%**	0.80%	**7.07%**	**2.36%**	1.25	**125.07%**	41.69%
Taylor's Copse	AW	AW 1490898_1_197m	<0.01	0.01	0.10%	0.03%	0.93%	0.31%	1.22	**121.93%**	40.64%
River Itchen	SAC	SAC SU475240_1_0m	0.04	0.15	**3.87%**	**1.29%**	**15.15%**	**5.05%**	1.54	**154.15%**	51.38%
River Itchen	SSSI	SSSI SU476240_2_0m	0.05	0.19	**5.31%**	**1.77%**	**18.64%**	**6.21%**	1.58	**157.64%**	52.55%
Otterbourne Primary School Meadow	SINC	SINC WC0062_1_164.5m	<0.01	0.01	0.44%	0.15%	**1.30%**	0.43%	1.21	**121.30%**	40.43%
Colden Common Meadow & Woodland	SINC	SINC WC0089_1_9.7m	<0.01	0.09	0.42%	0.14%	**8.85%**	**2.95%**	1.26	**125.85%**	41.95%
Durnford's Yard Meadow	SINC	SINC WC0082_1_186m	<0.01	0.02	0.12%	0.04%	**1.53%**	0.51%	1.23	**122.53%**	40.84%
Great Moorlands Copse Complex	SINC	SINC WC0050_2_17.6m	0.02	0.06	**2.16%**	0.72%	**6.30%**	**2.10%**	1.26	**126.30%**	42.10%
Alma Meadows (North)	SINC	SINC WC0160_1_6.7m	<0.01	0.03	0.33%	0.11%	**3.28%**	**1.09%**	1.17	**117.28%**	39.09%
Motte & Bailey & Chalk Pit	SINC	SINC WC0577_1_2.2m	<0.01	0.17	0.46%	0.15%	**17.32%**	**5.77%**	1.16	**116.32%**	38.77%
Blacknell's Copse Paddock	SINC	SINC WC0092_1_1.7m	0.01	0.17	0.73%	0.24%	**17.13%**	**5.71%**	1.34	**134.13%**	44.71%

Ecological feature	Designation	Transect ID and distance from road link	Maximum NH_3 Contribution						Total NH_3 concentration including background		
			Change in NH_3 concentration ($\mu g.m^{-3}$)		Proposed Development Alone change as % of CLe		Proposed Development and cumulative change as % of CLe		With Proposed Development and cumulative ($\mu g.m^{-3}$)	as % of Lower CLe	as % of Upper CLe
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLe	Upper CLe	Lower CLe	Upper CLe			
Hockley Golf Course	SINC	SINC WC0087_1_3.6m	0.02	0.08	**2.42%**	0.81%	**7.50%**	**2.50%**	1.47	**146.50%**	48.83%
Lower Upham Meadow	SINC	SINC WC0159_1_6.8m	<0.01	0.03	0.31%	0.10%	**2.54%**	0.85%	1.17	**116.54%**	38.85%
Blacknells Brickworks	SINC	SINC WC0094_1_141.1m	<0.01	0.01	0.09%	0.03%	**1.16%**	0.39%	1.18	**118.16%**	39.39%
Temple Usk Meadow	SINC	SINC WC0084_1_74.4m	<0.01	0.02	0.13%	0.04%	**1.92%**	0.64%	1.23	**122.92%**	40.97%
Church of The Holy Trinity	SINC	SINC WC0088_1_3.2m	0.01	0.15	0.65%	0.22%	**14.81%**	**4.94%**	1.32	**131.81%**	43.94%
Shawford Down	SINC	SINC WC0072_1_0.9m	0.02	0.05	**1.92%**	0.64%	**5.39%**	**1.80%**	1.31	**131.39%**	43.80%
Long Mead	SINC	SINC WC0055_1_79.8m	0.01	0.02	0.79%	0.26%	**2.32%**	0.77%	1.22	**122.32%**	40.77%
Finches Copse	SINC	SINC WC0086_1_82.5m	<0.01	0.01	0.11%	0.04%	**1.25%**	0.42%	1.18	**118.25%**	39.42%
St. Catherine's Hill	SSSI	SSSI SU485274_1_0m	0.04	0.11	**3.60%**	**1.20%**	**10.83%**	**3.61%**	1.53	**152.83%**	50.94%
St. Catherine's Hill	SSSI	SSSI SU485274_2_0m	0.05	0.16	**5.27%**	**1.76%**	**15.78%**	**5.26%**	1.58	**157.78%**	52.59%
Otterbourne Hill Common	SINC	SINC WC0054_1_32m	0.01	0.04	**1.50%**	0.50%	**4.36%**	**1.45%**	1.24	**124.36%**	41.45%
Taylor's Copse	SINC	SINC WC0083_1_112.7m	<0.01	0.01	0.11%	0.04%	**1.36%**	0.45%	1.22	**122.36%**	40.79%
Fisher’s Pond Wood	SINC	SINC WC0101_1_128m	<0.01	0.01	0.12%	0.04%	**1.35%**	0.45%	1.14	**114.35%**	38.12%
Hockley Golf Course	SINC	SINC WC0087_2_12.7m	0.01	0.10	**1.14%**	0.38%	**9.67%**	**3.22%**	1.49	**148.67%**	49.56%
Castle/Woodend Copses	AW	AW 1488208_1_61m	0.01	0.02	0.58%	0.19%	**1.69%**	0.56%	1.22	**121.69%**	40.56%
Colden Common Meadow & Woodland	SINC	SINC WC0089_2_4m	0.01	0.14	0.60%	0.20%	**13.55%**	**4.52%**	1.31	**130.55%**	43.52%
River Itchen	SAC	SAC SU475240_2_0m	0.05	0.17	**5.23%**	**1.74%**	**17.26%**	**5.75%**	1.56	**156.26%**	52.09%
River Itchen	SSSI	SSSI SU476240_2_55m	<0.01	0.02	0.48%	0.16%	**2.43%**	0.81%	1.41	**141.43%**	47.14%

6.8.50 As shown in Table 6-25~~Table 6-25~~, the NOx contribution of the Proposed Development was above 1% of the Critical Level (when considering both the Proposed Development alone and cumulatively) along 60 of the modelled ecological feature transects, incorporating 50 designated ecological features.

6.8.51 Full results for each ecological receptor transect are detailed in ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transects results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6). In relation to the SAC and SSSI designated ecological features presented in Table 6-25~~Table 6-25~~, predicted changes in NOx concentrations along transect points at:

1. The River Itchen SAC are predicted to be above 1% of the NOx Critical Level up to between 10m and 20m from the affected road link edge with the Proposed Development alone and up to between 130m and 140m from the affected road link edge with the Proposed Development cumulatively.
2. The River Itchen SSSI are predicted to be above 1% of the NOx Critical Level up to between 20m and 30m from the affected road link edge with the Proposed Development alone and up to between 170.2m and 180.2m from the affected road link edge with the Proposed Development cumulatively.
3. St Catherine's Hill SSSI are predicted to be above 1% of the NOx Critical Level up to between 10m and 20m from the affected road link edge with the Proposed Development alone and beyond 50m from the affected road link edge with the Proposed Development cumulatively.
4. Portsdown SSSI are predicted to be below 1% of the NOx Critical Level with the Proposed Development alone, but are predicted to be above 1% of the NOx Critical Level up to between 160.7m and 170.7m from the affected road edge with the Proposed Development cumulatively.

6.8.52 Whilst the NOx contribution of the Proposed Development was above 1% of the Critical Level, it should be noted that total NOx concentrations for both the Proposed Development alone and cumulatively are well below (i.e. less than 75% of) the Critical Level at all modelled receptors. Therefore, there are no predicted exceedances of the NOx Critical Level. As such, this reduces the likelihood of likely significant effects.

6.8.53 As shown in Table 6-26~~Table 6-26~~, the NH_3 contribution of the Proposed Development was above 1% of the lower Critical Level (when considering both the Proposed Development alone and cumulatively) along 72 of the modelled ecological feature transects, incorporating 62 designated ecological features. The resulting effect significance of construction road vehicle exhaust NO_x emissions on ecological receptors must be evaluated by an ecologist to determine whether there would be any significant adverse effect on the habitats for which the ecological features are designated. As such, the significance of effects is discussed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

6.8.54 Full results for each ecological receptor transect are detailed in ES Appendix 6.6 Construction road vehicle exhaust emissions assessment – ecological features transects results – ammonia, Volume II (Document reference 6.2, DCO Volume 6). In relation to the SAC and SSSI designated ecological features presented in Table

6-26~~Table 6-26~~, the predicted changes in NH_3 concentrations along transect points at:

1. The River Itchen SAC is predicted to be above 1% of the lower NH_3 Critical Level (as there is the potential for lichen and/or bryophyte species to be present in the woodland habitat at this ecological feature) beyond 60m from the affected road link edge with the Proposed Development alone and beyond 140m from the affected road link edge with the Proposed Development cumulatively.
2. The River Itchen SSSI are predicted to be above 1% of the lower NH_3 Critical Level (as there is the potential for lichen and/or bryophyte species to be present in the woodland habitat at this ecological feature) up to between 90m and 100m from the affected road link edge with the Proposed Development alone and beyond 200m from the affected road link edge with the Proposed Development cumulatively.
3. St Catherine's Hill SSSI are predicted to be above 1% of the upper NH_3 Critical Level (as the habitat here is grassland and therefore it is unlikely that lichen and/or bryophyte species will be present at this ecological feature) up to between 0m and 10m from the affected road link edge with the Proposed Development alone and beyond 50m from the affected road link edge with the Proposed Development cumulatively.
4. Portsdown SSSI are predicted to be below 1% of the upper NH_3 Critical Level (as the habitat here is grassland and therefore it is unlikely that lichen and/or bryophyte species will be present at this ecological feature) with the Proposed Development alone, but are predicted to be above 1% of the upper NH_3 Critical Level up to between 50.7m and 60.7m from the affected road link edge with the Proposed Development cumulatively.

6.8.55 Total NH_3 concentrations for both the Proposed Development alone and cumulatively are well below (i.e. less than 75% of) the upper Critical Level at St Catherine's Hill SSSI and Portsdown SSSI. Therefore, there are no predicted exceedances of the upper NH_3 Critical Level at these ecological features.

6.8.56 Total NH_3 concentrations for both the Proposed Development alone and cumulatively are in exceedance of the lower Critical Level at the River Itchen SAC and River Itchen SSSI for all modelled transect points. It should be noted that background NH_3 concentrations at these ecological features are already in exceedance of the lower Critical Level.

6.8.57 It should be noted that NH_3 concentrations fluctuate greatly due to meteorological factors. NH_3 data from the UK Eutrophying and Acidifying Network (UKEAP) national NH_3 monitoring network shows high spatial variability of the annual average concentration across a range of sites. The normal variation in NH_3 concentrations can be more than $1\mu g.m^{-3}$ (100% of the lower Critical Level) throughout the year [59]. Therefore, limited interpretation can be made because NH_3 concentrations can fluctuate by more than the lower Critical Level throughout the course of a year.

6.8.58 The resulting effect significance of construction road vehicle exhaust NH_3 emissions on ecological receptors must be evaluated by an ecologist to determine whether there would be any significant adverse effect on the habitats for which the ecological features are designated. As such, the significance of effects is

discussed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

Critical Loads

6.8.59 Table 6-27~~Table 6-27~~ and Table 6-28~~Table 6-28~~ present the potential contribution of the Proposed Development alone and cumulatively with other committed developments, plans and projects, on sensitive ecological receptors within the air quality study area in relation to nutrient nitrogen deposition and acid deposition. Values that exceed 1% of the Critical Load (i.e. those which cannot be considered insignificant) are shown in bold. Where transects have multiple receptors in exceedance of 1% of the Critical Load, only the nearest receptor to the affected road link has been presented in Table 6-27~~Table 6-27~~ and Table 6-28~~Table 6-28~~.

6.8.60 Predicted total deposition rates (including the relevant background deposition rates) at the ecological receptor locations (cumulatively, to present worst case) are detailed in Table 6-27~~Table 6-27~~ and Table 6-28~~Table 6-28~~. Values that exceed 100% of the Critical Load are shown in bold. Full results for each ecological receptor transect are detailed in ES Appendix 6.7 Construction road vehicle exhaust emissions assessment – ecological features transects results – nitrogen deposition, Volume II (Document reference 6.2, DCO Volume 6) and ES Appendix 6.8 Construction road vehicle exhaust emissions assessment – ecological features transects results – acid deposition, Volume II (Document reference 6.2, DCO Volume 6).

Table 6-27 Maximum contribution of Proposed Development generated nutrient nitrogen deposition Critical Load results

Ecological feature	Designation	Transect ID and distance from road link	Maximum nitrogen deposition contribution						Total nitrogen deposition including background		
			Change in nitrogen deposition (kgN.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (kgN.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
Eastleigh Borough Council											
Pitmore Copse (west)	AW	AW 1489875_1_8.5m	0.10	0.30	0.99%	0.66%	**2.95%**	**1.97%**	25.66	**256.55%**	**171.03%**
Fielders Farm Meadows (Winchester)	SINC	SINC WC0682_1_3.1m	0.08	1.22	0.78%	0.39%	**12.17%**	**6.09%**	14.76	**147.57%**	73.79%
HILL Copse	AW	AW 1488698_1_89m	0.02	0.14	0.16%	0.10%	**1.39%**	0.92%	24.75	**247.49%**	**164.99%**
Pitmore Copse	AW	AW 1488025_1_27m	0.11	0.28	**1.14%**	0.76%	**2.76%**	**1.84%**	25.34	**253.36%**	**168.91%**
Crowdhill Copse	SINC	SINC EA0089_1_62.1m	0.01	0.20	0.12%	0.08%	**1.95%**	**1.30%**	24.37	**243.65%**	**162.44%**
Chestnut Gully Wood	SINC	SINC EA0102_1_190m	0.01	0.12	0.10%	0.07%	**1.16%**	0.77%	24.97	**249.66%**	**166.44%**
Pitmore Copse (west)	AW	AW 1489875_2_15.8m	0.06	0.17	0.57%	0.38%	**1.71%**	**1.14%**	25.23	**252.31%**	**168.21%**
Gore Copse	SINC	SINC EA0110_1_9.7m	0.03	1.55	0.33%	0.22%	**15.55%**	**10.37%**	25.36	**253.65%**	**169.10%**
Knowle Lane Open Space	SINC	SINC EA0116_1_85.2m	0.01	0.33	0.09%	0.06%	**3.32%**	**2.21%**	24.21	**242.12%**	**161.41%**
River Itchen	SSSI	SSSI SU476240_1_0.2m	0.07	3.57	0.72%	0.48%	**35.71%**	**23.81%**	27.85	**278.51%**	**185.67%**
Ashtrim Nurseries	SINC	SINC EA0137_1_4.5m	0.03	1.32	0.28%	0.14%	**13.18%**	**6.59%**	14.68	**146.78%**	73.39%
Swamp West of Recreation Grounds	SINC	SINC EA0028_1_0.4m	0.07	3.24	0.68%	0.45%	**32.36%**	**21.57%**	27.48	**274.76%**	**183.17%**
Stoke Park Wood	SINC	SINC EA0073_1_19.1m	0.02	0.85	0.20%	0.13%	**8.54%**	**5.69%**	24.58	**245.84%**	**163.89%**
Fielders Farm Meadows (Eastleigh)	SINC	SINC EA0097_1_0m	0.12	1.73	**1.17%**	0.58%	**17.34%**	**8.67%**	15.27	**152.74%**	76.37%
The Mount, Fair Oak and Horton Heath	SINC	SINC EA0098_1_164m	0.05	0.17	0.48%	0.32%	**1.66%**	**1.11%**	25.02	**250.16%**	**166.77%**
River Itchen	SAC	SAC UK0012599_1_0m	0.07	3.36	0.67%	0.45%	**33.63%**	**22.42%**	27.60	**276.03%**	**184.02%**
Fareham District Council											
Blakes Copse	AW	AW 1488004_1_8.6m	0.05	-0.61	0.54%	0.36%	**-6.05%**	**-4.03%**	21.22	**212.25%**	**141.50%**
Havant Borough Council											
Chichester and Langstone Harbours	Ramsar	Ramsar UK11013_1_159.3m	0.01	0.02	0.19%	0.06%	0.43%	0.14%	11.06	**221.23%**	73.74%
Fort Purbrook Paddock 1 (Havant)	SINC	SINC HV0006_1_73m	0.01	0.10	0.08%	0.04%	**1.01%**	0.50%	11.66	**116.61%**	58.30%
Fields off Havant Road	SINC	SINC HV0027_1_3.1m	0.03	0.63	0.27%	0.14%	**6.33%**	**3.16%**	12.04	**120.43%**	60.21%
St Faith's Churchyard	SINC	SINC HV0150_1_153m	<0.01	0.03	0.01%	<0.01%	0.34%	0.17%	11.14	**111.44%**	55.72%
Portsmouth Golf Course West	SINC	SINC HV0002_1_80m	0.01	0.11	0.08%	0.04%	**1.05%**	0.53%	11.82	**118.15%**	59.08%
Fort Purbrook	SINC	SINC HV0003_1_75.8m	0.01	0.10	0.08%	0.04%	**1.04%**	0.52%	11.81	**118.14%**	59.07%
Fort Purbrook Paddock 3 (Havant)	SINC	SINC HV0143_1_75.3m	0.01	0.12	0.08%	0.05%	**1.19%**	0.79%	21.64	**216.39%**	**144.26%**

Ecological feature	Designation	Transect ID and distance from road link	Maximum nitrogen deposition contribution						Total nitrogen deposition including background		
			Change in nitrogen deposition (kgN.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (kgN.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
Portsmouth Golf Course East	SINC	SINC HV0011_1_126.3m	<0.01	0.06	0.05%	0.02%	0.58%	0.29%	11.62	**116.18%**	58.09%
Portsmouth City Council											
Fort Widley and Surrounds	SINC	SINC PO0002_1_5.9m	0.02	0.73	0.18%	0.09%	**7.30%**	**3.65%**	12.80	**128.00%**	64.00%
Meadow west of Farlington Avenue	SINC	SINC PO0006_1_3.9m	0.07	0.90	0.72%	0.36%	**9.01%**	**4.50%**	12.61	**126.11%**	63.05%
Land to the north of Portsdown Hill Road	SINC	SINC PO0009_1_4m	0.04	0.81	0.38%	0.25%	**8.15%**	**5.43%**	22.33	**223.35%**	**148.90%**
East and West of Gillman Road	SINC	SINC PO0019_1_3.2m	0.03	0.60	0.26%	0.13%	**6.02%**	**3.01%**	12.16	**121.62%**	60.81%
Land to the South of Portsdown Hill Road	SINC	SINC PO004_1_2.3m	0.12	1.92	**1.19%**	0.60%	**19.19%**	**9.59%**	13.81	**138.09%**	69.04%
Field to West of Gillman Road	SINC	SINC PO0025_1_3m	0.13	1.60	**1.28%**	0.85%	**15.97%**	**10.65%**	23.37	**233.67%**	**155.78%**
Birkdale Avenue	SINC	SINC PO0029_1_4.8m	0.11	1.32	**1.05%**	0.70%	**13.18%**	**8.79%**	23.09	**230.88%**	**153.92%**
Portsdown	SSSI	SSSI SU640065_1_0.7m	0.04	1.55	0.39%	0.19%	**15.54%**	**7.77%**	13.44	**134.44%**	67.22%
Fort Purbrook Paddock 2 (Havant)	SINC	SINC HV0007_1_75.5m	0.01	0.12	0.05%	0.03%	**1.22%**	0.81%	21.64	**216.42%**	**144.28%**
Fort Purbrook Paddock 4 (Havant)	SINC	SINC HV0142_1_74.9m	0.01	0.12	0.07%	0.05%	**1.15%**	0.77%	21.64	**216.35%**	**144.23%**
Field East of Farlington Redoubt (North)	SINC	SINC HV0014_1_76.3m	0.01	0.11	0.07%	0.05%	**1.08%**	0.72%	21.63	**216.28%**	**144.19%**
Land to the north of Portsdown Hill Road	SINC	SINC PO00009_2_3.5m	0.04	0.94	0.42%	0.28%	**9.38%**	**6.26%**	22.46	**224.58%**	**149.72%**
Farlington Avenue	SINC	SINC PO0026_1_61.2m	0.01	0.14	0.11%	0.06%	**1.37%**	0.69%	11.85	**118.47%**	59.24%
James Callaghan Drive	SINC	SINC PO0021_1_0m	0.04	1.55	0.38%	0.19%	**15.54%**	**7.77%**	13.79	**137.94%**	68.97%
Winchester City Council											
Martins Copse	AW	AW 1488658_1_176.6m	<0.01	-0.05	0.05%	0.03%	-0.50%	-0.34%	21.88	**218.80%**	**145.86%**
Unnamed Ancient Woodland east of Cranbourne Drive	AW	AW 1488547_1_11m	0.23	0.74	**2.30%**	**1.53%**	**7.36%**	**4.91%**	26.24	**262.36%**	**174.91%**
Unnamed Ancient Woodland west of Otterbourne Transfer Plant	AW	AW 1489079_1_0m	0.31	1.00	**3.14%**	**2.09%**	**10.01%**	**6.68%**	26.50	**265.01%**	**176.68%**
Stratton's Copse	AW	AW 1490813_1_180m	0.01	0.10	0.09%	0.06%	**1.02%**	0.68%	25.15	**251.52%**	**167.68%**
Blacknell's Copse	AW	AW 1490902_1_71m	0.01	0.22	0.13%	0.09%	**2.22%**	**1.48%**	25.27	**252.72%**	**168.48%**
Great Moorlands Copse Complex	SINC	SINC WC0050_1_5.6m	0.21	0.65	**2.07%**	**1.38%**	**6.52%**	**4.35%**	26.01	**260.12%**	**173.41%**
Colden Common Wood	AW	AW 149852_1_27.3m	0.02	0.46	0.23%	0.15%	**4.58%**	**3.06%**	25.51	**255.08%**	**170.06%**
Colden Common Wood & Blacknells Copse	SINC	SINC WC0095_1_0m	0.09	2.19	0.95%	0.63%	**21.88%**	**14.59%**	27.24	**272.38%**	**181.59%**
Fisher's Pond Wood	AW	AW 1490836_1_154m	0.01	0.12	0.10%	0.07%	**1.23%**	0.82%	25.17	**251.73%**	**167.82%**
Freemantles/Gt. Moorlands	AW	AW 1488462_1_4.5m	0.22	0.70	**2.17%**	**1.44%**	**7.01%**	**4.68%**	26.20	**262.01%**	**174.68%**
Taylor's Copse	AW	AW 1490898_1_197m	0.01	0.10	0.10%	0.07%	**1.01%**	0.67%	25.58	**255.81%**	**170.54%**

Ecological feature	Designation	Transect ID and distance from road link	Maximum nitrogen deposition contribution						Total nitrogen deposition including background		
			Change in nitrogen deposition (kgN.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (kgN.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
River Itchen	SAC	SAC SU475240_1_0m	0.34	1.43	**3.39%**	**2.26%**	**14.26%**	**9.51%**	27.46	**274.56%**	**183.04%**
River Itchen	SSSI	SSSI SU476240_2_0m	0.46	1.72	**4.60%**	**3.07%**	**17.22%**	**11.48%**	27.75	**277.52%**	**185.01%**
Otterbourne Primary School Meadow	SINC	SINC WC0062_1_164.5m	0.04	0.14	0.43%	0.29%	**1.45%**	0.96%	25.50	**255.05%**	**170.03%**
Colden Common Meadow & Woodland	SINC	SINC WC0089_1_9.7m	0.04	0.95	0.44%	0.29%	**9.49%**	**6.33%**	26.00	**259.99%**	**173.33%**
Durnford's Yard Meadow	SINC	SINC WC0082_1_186m	0.01	0.17	0.12%	0.08%	**1.65%**	**1.10%**	25.65	**256.45%**	**170.97%**
Great Moorlands Copse Complex	SINC	SINC WC0050_2_17.6m	0.20	0.63	**1.97%**	**1.31%**	**6.30%**	**4.20%**	25.99	**259.90%**	**173.26%**
Alma Meadows (North)	SINC	SINC WC0160_1_6.7m	0.02	0.21	0.23%	0.11%	**2.14%**	**1.07%**	13.91	**139.14%**	69.57%
Motte & Bailey & Chalk Pit	SINC	SINC WC0577_1_2.2m	0.05	1.78	0.48%	0.32%	**17.76%**	**11.84%**	24.96	**249.56%**	**166.38%**
Blacknell's Copse Paddock	SINC	SINC WC0092_1_1.7m	0.07	1.76	0.74%	0.49%	**17.62%**	**11.75%**	26.81	**268.12%**	**178.75%**
Wickham Meadow	SINC	SINC WC0344_1_0m	0.02	-0.09	0.16%	0.11%	-0.91%	-0.61%	21.84	**218.39%**	**145.59%**
Hockley Golf Course	SINC	SINC WC0087_1_3.6m	0.23	0.74	**2.26%**	**1.51%**	**7.43%**	**4.96%**	26.77	**267.73%**	**178.49%**
Lower Upham Meadow	SINC	SINC WC0159_1_6.8m	0.02	0.17	0.20%	0.10%	**1.67%**	0.83%	13.87	**138.67%**	69.33%
Blacknells Brickworks	SINC	SINC WC0094_1_141.1m	0.01	0.13	0.07%	0.04%	**1.25%**	0.83%	25.18	**251.75%**	**167.83%**
Temple Usk Meadow	SINC	SINC WC0084_1_74.4m	0.01	0.13	0.08%	0.04%	**1.28%**	0.64%	14.17	**141.68%**	70.84%
Church of The Holy Trinity	SINC	SINC WC0088_1_3.2m	0.04	0.96	0.41%	0.21%	**9.60%**	**4.80%**	14.75	**147.50%**	73.75%
Shawford Down	SINC	SINC WC0072_1_0.9m	0.18	0.54	**1.76%**	**1.17%**	**5.38%**	**3.59%**	26.32	**263.18%**	**175.46%**
Long Mead	SINC	SINC WC0055_1_79.8m	0.08	0.25	0.76%	0.51%	**2.47%**	**1.65%**	25.61	**256.07%**	**170.71%**
Finches Copse	SINC	SINC WC0086_1_82.5m	0.01	0.13	0.11%	0.08%	**1.35%**	0.90%	25.18	**251.85%**	**167.90%**
St. Catherine's Hill	SSSI	SSSI SU485274_1_0m	0.21	0.66	**2.06%**	**1.03%**	**6.57%**	**3.28%**	15.39	**153.87%**	76.93%
St. Catherine's Hill	SSSI	SSSI SU485274_2_0m	0.30	0.94	**2.97%**	**1.49%**	**9.37%**	**4.69%**	15.67	**156.67%**	78.34%
Otterbourne Hill Common	SINC	SINC WC0054_1_32m	0.14	0.45	**1.40%**	0.93%	**4.50%**	**3.00%**	25.81	**258.10%**	**172.06%**
Taylor's Copse	SINC	SINC WC0083_1_112.7m	0.01	0.15	0.15%	0.10%	**1.49%**	1.00%	25.63	**256.29%**	**170.86%**
Martin's Copse	SINC	SINC WC0338_1_197m	0.01	-0.05	0.07%	0.05%	-0.48%	-0.32%	21.88	**218.82%**	**145.88%**
Fisher's Pond Wood	SINC	SINC WC0101_1_128m	0.01	0.14	0.12%	0.08%	**1.42%**	0.95%	24.75	**247.52%**	**165.02%**
Hockley Golf Course	SINC	SINC WC0087_2_12.7m	0.11	0.98	**1.09%**	0.73%	**9.79%**	**6.53%**	27.01	**270.09%**	**180.06%**
Castle/Woodend Copses	AW	AW 1488208_1_61m	0.06	0.18	0.56%	0.38%	**1.83%**	**1.22%**	25.54	**255.43%**	**170.29%**
Colden Common Meadow & Woodland	SINC	SINC WC0089_2_4m	0.06	1.42	0.64%	0.43%	**14.17%**	**9.44%**	26.47	**264.67%**	**176.44%**
River Itchen	SAC	SAC SU475240_2_0m	0.45	1.60	**4.51%**	**3.01%**	**15.99%**	**10.66%**	27.63	**276.29%**	**184.20%**
River Itchen	SSSI	SSSI SU476240_2_55m	0.05	0.26	0.46%	0.31%	**2.61%**	**1.74%**	26.29	**262.91%**	**175.28%**

Table 6-28 Maximum contribution of Proposed Development generated acid deposition Critical Load results

Ecological feature	Designation	Transect ID and distance from road link	Maximum acid deposition contribution						Total acid deposition including background		
			Change in acid deposition (keq.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (keq.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
Eastleigh Borough Council											
Pitmore Copse (west)	AW	AW 1489875_1_8.5m	0.01	0.02	**2.47%**	0.59%	**7.37%**	**1.76%**	1.93	**676.04%**	**160.96%**
Fielders Farm Meadows (Winchester)	SINC	SINC WC0682_1_3.1m	0.01	0.09	0.52%	0.11%	**8.09%**	**1.71%**	1.11	**103.86%**	21.94%
Hill Copse	AW	AW 1488698_1_89m	<0.01	0.01	0.31%	0.04%	**2.77%**	0.31%	1.86	**519.77%**	59.11%
Pitmore Copse	AW	AW 1488025_1_27m	0.01	0.02	**2.27%**	0.28%	**5.51%**	0.68%	1.91	**533.72%**	65.77%
Crowdhill Copse	SINC	SINC EA0089_1_62.1m	<0.01	0.01	0.62%	0.06%	**9.79%**	0.96%	1.83	**1288.45%**	**126.88%**
Chestnut Gully Wood	SINC	SINC EA0102_1_190m	<0.01	0.01	0.19%	0.02%	**2.31%**	0.26%	1.86	**522.11%**	59.34%
Pitmore Copse (west)	AW	AW 1489875_2_15.8m	<0.01	0.01	**1.13%**	0.14%	**3.41%**	0.42%	1.90	**531.61%**	65.51%
Gore Copse	SINC	SINC EA0110_1_9.7m	<0.01	0.11	**1.64%**	0.08%	**77.96%**	**3.78%**	1.91	**1342.54%**	65.04%
Knowle Lane Open Space	SINC	SINC EA0116_1_85.2m	<0.01	0.02	0.46%	0.02%	**16.64%**	0.82%	1.82	**1281.21%**	63.13%
River Itchen	SSSI	SSSI SU476240_1_0.2m	0.01	0.25	**1.43%**	0.06%	**71.22%**	**2.88%**	2.09	**585.42%**	23.67%
Swamp West of Recreation Grounds	SINC	SINC EA0028_1_0.4m	<0.01	0.23	**3.41%**	0.34%	**162.24%**	**15.99%**	2.07	**1454.98%**	**143.38%**
Stoke Park Wood	SINC	SINC EA0073_1_19.1m	<0.01	0.06	1.00%	0.10%	**42.82%**	**4.22%**	1.86	**1307.40%**	**128.83%**
Fielders Farm Meadows (Eastleigh)	SINC	SINC EA0097_1_0m	0.01	0.12	0.78%	0.16%	**11.53%**	**2.43%**	1.15	**107.30%**	22.66%
The Mount, Fair Oak and Horton Heath	SINC	SINC EA0098_1_164m	<0.01	0.01	0.96%	0.11%	**3.31%**	0.38%	1.87	**523.11%**	59.46%
River Itchen	SAC	SAC UK0012599_1_0m	<0.01	0.24	**1.34%**	0.05%	**67.08%**	**2.71%**	2.08	**581.28%**	23.51%
Fareham District Council											
Blakes Copse	AW	AW 1488004_1_8.6m	<0.01	-0.04	**2.72%**	0.13%	**-30.35%**	**-1.48%**	1.64	**1156.77%**	56.60%
Havant Borough Council											
Fields off Havant Road	SINC	SINC HV0027_1_3.1m	<0.01	0.05	0.18%	0.04%	**4.21%**	0.89%	0.93	86.90%	18.35%
Fort Purbrook Paddock 3 (Havant)	SINC	SINC HV0143_1_75.3m	<0.01	0.01	0.15%	0.03%	**2.36%**	0.43%	1.65	**463.34%**	84.74%
Portsmouth City Council											
Fort Widley and Surrounds	SINC	SINC PO0002_1_5.9m	<0.01	0.05	0.15%	0.03%	**6.07%**	**1.07%**	1.01	**117.72%**	20.75%
Meadow west of Farlington Avenue	SINC	SINC PO0006_1_3.9m	0.01	0.06	0.48%	0.10%	**5.99%**	**1.26%**	0.97	90.55%	19.12%
Land to the north of Portsdown Hill Road	SINC	SINC PO0009_1_4m	<0.01	0.06	0.76%	0.14%	**16.25%**	**2.97%**	1.70	**477.23%**	87.28%

Ecological feature	Designation	Transect ID and distance from road link	Maximum acid deposition contribution						Total acid deposition including background		
			Change in acid deposition (keq.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (keq.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
East and West of Gillman Road	SINC	SINC PO0019_1_3.2m	<0.01	0.04	0.18%	0.04%	**4.00%**	0.84%	0.94	87.63%	18.51%
Land to the South of Portsdown Hill Road	SINC	SINC PO004_1_2.3m	0.01	0.14	0.99%	0.17%	**15.96%**	**2.81%**	1.07	**125.27%**	22.08%
Field to West of Gillman Road	SINC	SINC PO0025_1_3m	0.01	0.11	**2.55%**	0.41%	**31.85%**	**5.17%**	1.78	**498.43%**	80.96%
Birkdale Avenue	SINC	SINC PO0029_1_4.8m	0.01	0.09	**2.10%**	0.34%	**26.28%**	**4.27%**	1.76	**492.87%**	80.05%
Portsdown	SSSI	SSSI SU640065_1_0.7m	<0.01	0.11	0.32%	0.06%	**12.92%**	**2.28%**	1.05	**122.23%**	21.55%
Fort Purbrook Paddock 2 (Havant)	SINC	SINC HV0007_1_75.5m	<0.01	0.01	0.10%	0.02%	**2.42%**	0.44%	1.65	**463.40%**	84.75%
Fort Purbrook Paddock 4 (Havant)	SINC	SINC HV0142_1_74.9m	<0.01	0.01	0.14%	0.03%	**2.30%**	0.42%	1.65	**463.28%**	84.73%
Field East of Farlington Redoubt (North)	SINC	SINC HV0014_1_76.3m	<0.01	0.01	0.14%	0.03%	**2.16%**	0.40%	1.65	**463.14%**	84.70%
Land to the north of Portsdown Hill Road	SINC	SINC PO00009_2_3.5m	<0.01	0.07	0.84%	0.15%	**18.72%**	**3.42%**	1.71	**479.70%**	87.73%
James Callaghan Drive	SINC	SINC PO0021_1_0m	<0.01	0.11	0.31%	0.06%	**12.92%**	**2.28%**	1.09	**126.91%**	22.37%
Winchester City Council											
Martins Copse	AW	AW 1488658_1_176.6m	<0.01	<0.01	0.09%	0.01%	**-1.00%**	-0.12%	1.68	**471.18%**	57.27%
Unnamed Ancient Woodland east of Cranbourne Drive	AW	AW 1488547_1_11m	0.02	0.05	**4.58%**	0.56%	**14.68%**	**1.80%**	1.96	**548.49%**	67.38%
Unnamed Ancient Woodland west of Otterbourne Transfer Plant	AW	AW 1489079_1_0m	0.02	0.07	**6.25%**	0.77%	**19.96%**	**2.45%**	1.98	**553.77%**	68.03%
Stratton's Copse	AW	AW 1490813_1_180m	<0.01	0.01	0.18%	0.02%	**2.04%**	0.23%	1.87	**524.65%**	59.63%
Blacknell's Copse	AW	AW 1490902_1_71m	<0.01	0.02	0.26%	0.03%	**4.43%**	0.50%	1.88	**527.04%**	59.90%
Great Moorlands Copse Complex	SINC	SINC WC0050_1_5.6m	0.01	0.05	**5.16%**	**1.23%**	**16.29%**	**3.88%**	1.95	**684.96%**	**163.09%**
Colden Common Wood	AW	AW 149852_1_27.3m	<0.01	0.03	0.45%	0.05%	**9.14%**	**1.04%**	1.90	**531.75%**	60.44%
Colden Common Wood & Blacknells Copse	SINC	SINC WC0095_1_0m	0.01	0.16	**1.89%**	0.21%	**43.64%**	**4.96%**	2.02	**566.25%**	64.36%
Fisher's Pond Wood	AW	AW 1490836_1_154m	<0.01	0.01	0.21%	0.02%	**2.46%**	0.28%	1.87	**525.06%**	59.68%

Ecological feature	Designation	Transect ID and distance from road link	Maximum acid deposition contribution						Total acid deposition including background		
			Change in acid deposition (keq.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (keq.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
Freemantles/Gt. Moorlands	AW	AW 1488462_1_4.5m	0.02	0.05	**4.32%**	0.53%	**13.98%**	**1.72%**	1.96	**547.79%**	67.30%
Taylor's Copse	AW	AW 1490898_1_197m	<0.01	0.01	0.21%	0.02%	**2.01%**	0.23%	1.90	**533.02%**	60.51%
River Itchen	SAC	SAC SU475240_1_0m	0.02	0.10	**6.76%**	0.27%	**28.44%**	**1.15%**	2.03	**567.85%**	22.96%
River Itchen	SSSI	SSSI SU476240_2_0m	0.03	0.12	**9.17%**	0.37%	**34.33%**	**1.39%**	2.05	**573.74%**	23.20%
Otterbourne Primary School Meadow	SINC	SINC WC0062_1_164.5m	<0.01	0.01	**1.08%**	0.26%	**3.62%**	0.86%	1.92	**672.28%**	**160.07%**
Colden Common Meadow & Woodland	SINC	SINC WC0089_1_9.7m	<0.01	0.07	0.88%	0.10%	**18.93%**	**2.15%**	1.93	**541.53%**	61.55%
Durnford's Yard Meadow	SINC	SINC WC0082_1_186m	<0.01	0.01	0.25%	0.03%	**3.30%**	0.37%	1.91	**534.31%**	60.65%
Great Moorlands Copse Complex	SINC	SINC WC0050_2_17.6m	0.01	0.04	**4.92%**	**1.17%**	**15.73%**	**3.74%**	1.95	**684.39%**	**162.95%**
Alma Meadows (North)	SINC	SINC WC0160_1_6.7m	<0.01	0.02	0.15%	0.03%	**1.42%**	0.30%	1.04	97.19%	20.53%
Motte & Bailey & Chalk Pit	SINC	SINC WC0577_1_2.2m	<0.01	0.13	0.95%	0.12%	**35.43%**	**4.36%**	1.93	**541.22%**	66.63%
Blacknell's Copse Paddock	SINC	SINC WC0092_1_1.7m	0.01	0.13	**1.48%**	0.17%	**35.14%**	**3.99%**	1.99	**557.75%**	63.39%
Wickham Meadow	SINC	SINC WC0344_1_0m	<0.01	-0.01	0.32%	0.04%	**-1.81%**	-0.22%	1.68	**470.37%**	57.18%
Hockley Golf Course	SINC	SINC WC0087_1_3.6m	0.02	0.05	**11.35%**	0.18%	**37.27%**	0.61%	1.98	**1393.40%**	22.66%
Lower Upham Meadow	SINC	SINC WC0159_1_6.8m	<0.01	0.01	0.13%	0.03%	**1.11%**	0.23%	1.04	96.88%	20.46%
Blacknells Brickworks	SINC	SINC WC0094_1_141.1m	<0.01	0.01	0.13%	0.02%	**2.50%**	0.28%	1.87	**525.10%**	59.68%
Church of The Holy Trinity	SINC	SINC WC0088_1_3.2m	<0.01	0.07	0.27%	0.06%	**6.38%**	**1.35%**	1.10	**103.08%**	21.77%
Shawford Down	SINC	SINC WC0072_1_0.9m	0.01	0.04	**8.82%**	0.11%	**26.99%**	0.34%	1.95	**1376.07%**	17.46%
Long Mead	SINC	SINC WC0055_1_79.8m	0.01	0.02	**1.90%**	0.45%	**6.17%**	**1.47%**	1.92	**674.83%**	**160.67%**
Finches Copse	SINC	SINC WC0086_1_82.5m	<0.01	0.01	0.23%	0.03%	**2.69%**	0.31%	1.88	**525.29%**	59.70%
St. Catherine's Hill	SSSI	SSSI SU485274_1_0m	0.01	0.05	**1.71%**	0.30%	**5.46%**	0.96%	1.13	**132.29%**	23.32%
St. Catherine's Hill	SSSI	SSSI SU485274_2_0m	0.02	0.07	**2.47%**	0.44%	**7.79%**	**1.37%**	1.15	**134.63%**	23.73%
Otterbourne Hill Common	SINC	SINC WC0054_1_32m	0.01	0.03	**3.50%**	0.83%	**11.23%**	**2.67%**	1.94	**679.90%**	**161.88%**
Taylor's Copse	SINC	SINC WC0083_1_112.7m	<0.01	0.01	0.29%	0.03%	**2.98%**	0.34%	1.91	**533.99%**	60.61%
Martin's Copse	SINC	SINC WC0338_1_197m	<0.01	<0.01	0.15%	0.02%	-0.95%	-0.12%	1.68	**471.23%**	57.28%
Fisher's Pond Wood	SINC	SINC WC0101_1_128m	<0.01	0.01	0.24%	0.03%	**2.84%**	0.32%	1.86	**519.84%**	59.12%
Hockley Golf Course	SINC	SINC WC0087_2_12.7m	0.01	0.07	**5.47%**	0.07%	**49.08%**	0.62%	2.00	**1405.21%**	17.83%

Ecological feature	Designation	Transect ID and distance from road link	Maximum acid deposition contribution						Total acid deposition including background		
			Change in acid deposition (keq.ha.yr^{-1})		Proposed Development alone change as % of CLo		Proposed Development and cumulative change as % of CLo		With Proposed Development and cumulative (keq.ha.yr^{-1})	as % of Lower CLo	as % of Upper CLo
			Contribution from Proposed Development alone	Contribution from Proposed Development and cumulative	Lower CLo	Upper CLo	Lower CLo	Upper CLo			
Castle/Woodend Copses	AW	AW 1488208_1_61m	<0.01	0.01	**1.41%**	0.34%	**4.58%**	**1.09%**	1.92	**673.25%**	**160.30%**
Colden Common Meadow & Woodland	SINC	SINC WC0089_2_4m	<0.01	0.10	**1.28%**	0.15%	**28.25%**	**3.21%**	1.97	**550.86%**	62.61%
River Itchen	SAC	SAC SU475240_2_0m	0.03	0.11	**8.99%**	0.36%	**31.89%**	**1.29%**	2.04	**571.30%**	23.10%
River Itchen	SSSI	SSSI SU476240_2_55m	<0.01	0.02	0.91%	0.04%	**5.21%**	0.21%	1.94	**544.63%**	22.02%

6.8.61 As shown in Table 6-27~~Table 6-27~~, the nutrient nitrogen contribution of the Proposed Development was above 1% of the lower Critical Load (when considering both the Proposed Development alone and cumulatively) along 79 of the modelled ecological feature transects, incorporating 69 designated ecological features.

6.8.62 In relation to the Ramsar, SAC and SSSI designated ecological features presented in Table 6-27~~Table 6-27~~, the predicted changes in nutrient nitrogen deposition rates along transect points at:

1. Chichester and Langstone Harbours Ramsar are predicted to be below 1% of the lower nitrogen deposition Critical Load with the Proposed Development alone and cumulatively.
2. The River Itchen SAC are predicted to be above 1% of the lower nitrogen deposition Critical Load up to between 50m and 60m from the affected road link edge with the Proposed Development alone and beyond 140m from the affected road link edge with the Proposed Development cumulatively.
3. The River Itchen SSSI are predicted to be above 1% of the lower nitrogen deposition Critical Load up to between 80m and 90m from the affected road link edge with the Proposed Development alone and beyond 200m from the affected road link edge with the Proposed Development cumulatively.
4. St. Catherine's Hill SSSI are predicted to be above 1% of the lower nitrogen deposition Critical Load up to between 20m and 30m from the affected road link edge with the Proposed Development alone and beyond 50m from the affected road link edge with the Proposed Development cumulatively.
5. Portsdown SSSI are predicted to be below 1% of the lower nitrogen deposition Critical Load with the Proposed Development alone, but are predicted to be above 1% of the lower nitrogen deposition Critical Load up to between 160.7m and 170.7m from the affected road link edge with the Proposed Development cumulatively.

6.8.63 Total nitrogen deposition rates for both the Proposed Development alone and cumulatively are in exceedance of the lower Critical Load at Chichester and Langstone Harbours Ramsar, the River Itchen SAC, the River Itchen SSSI, St Catherine's Hill SSSI and Portsdown SSSI for all modelled transect points (as well as at all other Ancient Woodland and SINCs that were assessed). It should be noted that background nutrient nitrogen deposition rates already exceed the lower Critical Loads at all assessed ecological features.

6.8.64 As shown in Table 6-27~~Table 6-27~~ the acid deposition contribution of the Proposed Development was above 1% of the lower Critical Load (when considering both the Proposed Development alone and cumulatively) along 70 of the modelled ecological feature transects, incorporating 60 designated ecological features.

6.8.65 In relation to the SAC and SSSI designated ecological features presented in Table 6-28~~Table 6-28~~, the predicted changes in acid deposition rates along transect points at:

1. The River Itchen SAC are predicted to be above 1% of the lower Critical Load beyond 70m from the affected road link edge with the Proposed Development alone and beyond 140m from the affected road link edge with the Proposed Development cumulatively.

2. The River Itchen SSSI are predicted to be above 1% of the lower Critical Load beyond 120m from the affected road link edge with the Proposed Development alone and beyond 200m from the affected road link edge with the Proposed Development cumulatively.
3. St. Catherine's Hill SSSI are predicted to be above 1% of the lower Critical Load up to between 10m and 20m from the affected road link edge with the Proposed Development alone and beyond 50m from the affected road link edge with the Proposed Development cumulatively.
4. Portsdown SSSI are predicted to be below 1% of the lower Critical Load with the Proposed Development alone, but are predicted to be above 1% of the lower Critical Load up to between 110.7m and 120.7m from the affected road link edge with the Proposed Development cumulatively.

6.8.66 Total acid deposition rates for both the Proposed Development alone and cumulatively are in exceedance of the lower Critical Load at the River Itchen SAC, the River Itchen SSSI, St Catherine's Hill SSSI and Portsdown SSSI for all modelled transect points. It should be noted that background acid deposition rates already exceed the lower Critical Loads at these ecological features.

6.8.67 An absence of likely significant effects cannot be concluded for ecological features where the nitrogen deposition rate and/or acid deposition rate contribution from the Proposed Development, either alone or cumulatively, is predicted to exceed 1% of the relevant Critical Load, as there is the potential for likely significant effects. Ecological interpretation of these impacts is therefore required. As such, the significance of effects is discussed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

Ammonia emissions factors sensitivity test

6.8.68 The assessment has been undertaken using CREAM V1A. However, an update to CREAM was subsequently released. As such, sensitivity testing has been undertaken to compare the results of the road traffic emissions assessment using CREAM V1A derived NH_3 emissions against CREAM V2A derived NH_3 emissions. It is understood that CREAM V1A is generally more conservative than CREAM V2A. However, there are some cases where CREAM V2A NH_3 emissions can be higher than those derived using CREAM V1A – particularly at lower speeds. Overall, it was found that in the majority of cases, using CREAM V2A derived NH_3 emissions resulted in no material change or material improvements in modelled Process Contributions (PCs) (i.e. going from ≥1% to <1% of the relevant Critical Level or Critical Load). A summary of the ecological feature transect points exhibiting material improvements is presented in Table 6-29~~Table 6-29~~.

Table 6-29 Summary of number of ecological feature transect points exhibiting material improvements of the PC in relation to the relevant Critical Level or Critical Load – CREAM V1A against CREAM V2A

Pollutant	Proposed Development alone	Proposed Development and cumulative
NOx	No change	No change
NH_3	33	102
Nitrogen deposition	20	79

Pollutant	Proposed Development alone	Proposed Development and cumulative
Acid deposition	27	24

6.8.69 However, it was found that two out of the 801 ecological feature receptor points assessed showed a material worsening of potential likely significant effects, specifically for acid deposition for the Proposed Development alone scenario. A comparison of the modelled concentrations is presented in Table 6-30~~Table 6-30~~.

Table 6-30 Comparison of CREAM V1A against CREAM V2A material change – maximum acid deposition contribution

Ecological feature	Designation	Transect ID and distance from road	CREAM V1A		CREAM V2A	
			Change in acid deposition - contribution from Proposed Development alone (keq.ha.yr^{-1})	Proposed Development alone change as % of Lower CLo	Change in acid deposition - contribution from Proposed Development alone (keq.ha.yr^{-1})	Proposed Development alone change as % of Lower CLo
Stoke Park Wood	SINC	SINC EA0073_1_19.1m	0.001	0.996	0.001	**1.028**
The Mount, Fair Oak and Horton Heath	SINC	SINC EA0098_1_164m	0.003	0.958	0.004	**1.168**

6.8.70 As shown in Table 6-30~~Table 6-30~~, the acid deposition PC of the Proposed Development at Stoke Park Wood and The Mount, Fair Oak and Horton Heath SINCs went from below 1% of the lower Critical Load using CREAM V1A NH_3 emissions to above 1% of the lower Critical Load using CREAM V2A NH_3 emissions. Ecological interpretation of these impacts is therefore required. As such, the significance of effects is discussed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

Cumulative effects from non-road sources

Identification of potential non-road source cumulative effects

6.8.71 As set out in section 6.5, a search following Natural England's IRZ criteria identified one project, a proposed National Grid Back-up Gas Fuelled Generation Plant (APP/24/0023), to be screened into the non-road source cumulative assessment.

Assessment of cumulative effects

6.8.72 The National Grid Back-up Gas Fuelled Generation Plant gained planning consent in June 2024 and is located approximately 300m from the Proposed Development and 400m from the Chichester and Langstone Harbours Ramsar and SPA/Solent Maritime SAC/Langstone Harbour SSSI.

6.8.73 Using the air quality assessment submitted alongside the planning application, the worst case contribution of NO_x and nutrient nitrogen deposition from the National Grid Back-up Gas Fuelled Generation Plant at the Chichester and Langstone Harbours Ramsar and SPA/Solent Maritime SAC/Langstone Harbour SSSI was identified at receptor ER3. This was added to the predicted contributions from traffic arising from the Proposed Development cumulatively with other committed development, plans and projects to ensure the likely worst case impact of this development on the Chichester and Langstone Harbours Ramsar and SPA/Solent Maritime SAC/Langstone Harbour SSSI was assessed cumulatively. It should be noted that the planning application did not contain any information on NH_3 or acid deposition, hence it was not possible to assess these further.

6.8.74 The results for NOx contributions are presented in Table 6-31~~Table 6-31~~. Contributions that exceed 1% of the Critical Level are shown in bold. The results for the nitrogen deposition contributions are presented in Table 6-32~~Table 6-32~~. Contributions that exceed 1% of the Critical Load and total deposition rates that exceed 100% of the Critical Load are shown in bold.

Table 6-31 Contribution of screened in cumulative projects and Proposed Development and cumulative traffic NO_X Critical Level results

Ecological feature	Designation	Transect ID and distance from road link	Maximum NO_X contribution			Change as % of CLe	Total NO_X concentration including background	
			Change in NO_X concentration ($\mu g.m^{-3}$)				With Proposed Development and cumulative + contribution from screened in project ($\mu g.m^{-3}$)	% of CLe
			Contribution from screened in project	Contribution from Proposed Development and cumulative traffic	Proposed Development and cumulative traffic + Contribution from screened in project			
Chichester and Langstone Harbours/ Solent Maritime/ Langstone Harbour	Ramsar and SPA/SAC/ SSSI	Ramsar UK11013_1_159.3m	0.57	0.07	0.64	**2.13%**	18.38	61.28%
		Ramsar UK11013_1_169.3m		0.06	0.63	**2.12%**	18.38	61.27%
		Ramsar UK11013_1_179.3m		0.06	0.63	**2.11%**	18.38	61.26%
		Ramsar UK11013_1_189.3m		0.06	0.63	**2.10%**	18.38	61.25%
		Ramsar UK11013_1_199.3m		0.06	0.63	**2.09%**	18.37	61.25%

Table 6-32 Contribution of screened in cumulative projects and Proposed Development and cumulative traffic Nitrogen Deposition Critical Load results

Ecological feature	Designation	Transect ID and distance from road link	Maximum nutrient nitrogen contribution			Change as % of CLo		Total nutrient nitrogen deposition including background		
			Change in nutrient nitrogen deposition ($kgN.ha.yr^{-1}$)					With Proposed Development and cumulative traffic + Contribution from screened in project ($kgN.ha.yr^{-1}$)	as % of lower CLo	as % of upper CLo
			Contribution from screened in project	Contribution from Proposed Development and cumulative traffic	Proposed Development and cumulative traffic + Contribution from screened in project	lower CLo	upper CLo			
Chichester and Langstone Harbours/ Solent Maritime/ Langstone Harbour	Ramsar and SPA/SAC/ SSSI	Ramsar UK11013_1_159.3m	0.17	0.02	0.19	**3.83%**	**1.28%**	11.23	**224.63%**	74.88%
		Ramsar UK11013_1_169.3m		0.02	0.19	**3.79%**	**1.26%**	11.23	**224.59%**	74.86%
		Ramsar UK11013_1_179.3m		0.02	0.19	**3.78%**	**1.26%**	11.23	**224.58%**	74.86%
		Ramsar UK11013_1_189.3m		0.02	0.19	**3.77%**	**1.26%**	11.23	**224.57%**	74.86%
		Ramsar UK11013_1_199.3m		0.02	0.19	**3.73%**	**1.24%**	11.23	**224.53%**	74.84%

6.8.75 As shown in Table 6-31~~Table 6-31~~ with the addition of the NO_X contribution from the National Grid Back-up Gas Fuelled Generation Plant to the contribution of the Proposed Development and cumulative traffic, the cumulative contributions are predicted to be above 1% of the Critical Level at the Chichester and Langstone Harbours Ramsar and SPA/Solent Maritime SAC/Langstone Harbour SSSI. However, total cumulative NO_x concentrations are predicted to be well below (i.e. less than 75% of) the Critical Level at all modelled receptors. As such, the significance of effects is discussed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

6.8.76 As shown in Table 6-32~~Table 6-32~~ the cumulative nutrient nitrogen deposition contributions are predicted to exceed 1% of both the relevant upper and lower Critical Loads at the Chichester and Langstone Harbours Ramsar and SPA/Solent Maritime SAC/Langstone Harbour SSSI. The total cumulative contributions are predicted to exceed the most stringent nutrient nitrogen deposition Critical Load, however these remained below the least stringent Critical Load at this designated ecological feature. It should be noted that background nutrient nitrogen deposition already exceeds the lower Critical Load at the Chichester and Langstone Harbours Ramsar and SPA/Solent Maritime SAC/Langstone Harbour SSSI.

6.8.77 An absence of likely significant cannot be concluded where the nutrient nitrogen deposition is predicted to exceed 1% of the relevant Critical Load, as there is the potential for likely significant effects. As such, the effect significance of nutrient nitrogen deposition impacts is discussed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).

Operational effects

Operational phase road traffic movements

6.8.78 The EIA Scoping Opinion agreed to scope out the potential impacts of road traffic emissions on human and ecological receptors during operation. However, it was requested by the Planning Inspectorate to provide evidence that operational road traffic flows would be below relevant screening thresholds.

6.8.79 Operational road traffic flows would be predominantly for maintenance and deliveries associated with the WRP site. It has been advised that during operation there would be a maximum of 80 Heavy Goods Vehicles (HGVs) within a 30-day period when the WRP site is operating at maximum capacity (60Ml/day). This reduces to 20 HGVs within a 30-day period when operating at a lower capacity. As such, approximately three AADT HGVs are anticipated throughout the operational phase of the Proposed Development. Based on this, HGV movements would not exceed the IAQM and EPUK screening threshold of 50 AADT HGV on the public road network and no additional assessment is required.

6.8.80 Emissions from the small number of additional vehicles attributable to operational traffic from the project-alone are therefore likely to be not perceptible. On this basis, it was agreed with relevant stakeholders during the EIA emissions and transport Session 10/11 in September 2025 to not assess cumulative operational phase vehicle movements in relation to air quality.

6.8.81 Construction is anticipated to be completed and operation commence in 2034. As discussed in the above sections, the operation of the Proposed Development is

anticipated to have negligible emissions of $PM_{2.5}$ associated with it. Therefore, given that $PM_{2.5}$ emissions are negligible and that operation starts before 2040, it is anticipated that the Proposed Development will have no adverse impact on the achievement of the 2040 $PM_{2.5}$ targets.

Operational phase Non-Road Mobile Machinery

6.8.82 Operational phase impacts from the Proposed Development have been scoped out of the assessment, as agreed in the EIA Scoping Opinion. Notwithstanding this, the Planning Inspectorate requested that additional information is provided in relation to operational plant and included as part of the assessment.

6.8.83 As detailed within ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6), an emergency generator would be installed at the WRP site, IPS, and BPT sites. These generators are designed to supply electricity during power outages. In such events, the generators would operate continuously until normal power is restored. Each generator would be tested every 90 days during daytime hours. These routine tests would involve the generator being started for 75 minutes. Generators would be positioned as far as reasonably possible from sensitive receptors and other emission sources, in line with good practice guidelines.

6.8.84 With reference to the Air Quality Consultants Technical Note [60], it is considered that there is sufficient evidence of an absence of likely significant effects on human receptors given the limited operational requirements, the use of best practicable technology and the distance to human and ecological receptors.

6.8.85 Taking into account the likely short-term and infrequent nature of the operation of emergency generators relative to plant and NRMM assessed for construction activities (see section 6.8, for which it was considered no likely significant effects would arise), effects associated with operational phase plant are considered to be not significant. Furthermore, an environmental permit would be obtained if required.

Operational odour impacts

6.8.86 Operations at Budds Farm WTW would remain unchanged as part of the Proposed Development. The WRP site would utilise and receive the wastewater from the existing treatment process at Budds Farm WTW. The wastewater entering the WRP site would comprise of highly treated wastewater and would have already be extensively cleaned and treated at Budds Farm WTW. Final highly treated wastewater entering the WRP site is not anticipated to be odorous and would resemble river water more than wastewater. The recycled water produced by the WRP site would be ~~drinkable and would meet strict~~treated to be appropriate to be held in the natural environment along with spring water ~~quality standards~~in compliance with abstraction/discharge consents and would therefore be odourless.

6.8.87 As detailed in section 6.7, it has been confirmed by HBC that no actionable odour-related complaints have been received in relation to existing operations at Budds Farm WTW over recent years. Odour complaints were received by the Applicant. However, these were on average six per year between 2018-2023 and highlight the rarity of issues at Budds Farm WTW. According to the records provided, there

was one complaint received by HBC in 2024, however this was found to be a transient issue with no enforcement action taken and no complaints received directly by Budds Farm WTW up to 10 July 2025.

6.8.88 The Proposed Development would not involve modifications to the odorous components of Budds Farm WTW and utilises wastewater with minimal odour potential, it is not expected to contribute to any odour-related issues during its operation. On this basis, effects associated with potential odours arising from the operation of the Proposed Development are considered to be not significant.

Decommissioning

6.8.89 The components of the Proposed Development are expected to have a design life of up to 100 years, however the operational life could be longer than this. The specific method of decommissioning of the Proposed Development at the end of its operational life is uncertain at present because engineering approaches would evolve over this time period.

6.8.90 During the decommissioning phase, it is assumed that above-ground assets would be removed, including process, mechanical and electrical equipment, buildings, and associated below-ground structures. It is assumed that buried pipeline infrastructure would be left in situ following the end of the solution life cycle, once drained and capped depending on industry good practice at the time.

6.8.91 Effects from decommissioning of the Proposed Development are considered to be no greater than those identified during the construction phase and are therefore assessed as being the same as construction effects. The significance of effects resulting from decommissioning is therefore the same as reported as for the construction effects.

6.8.92 Where decommissioning activities differ from those assessed during construction (e.g. demolition of small structures associated with the WRP), these activities would be assessed using industry good practice and would comply with the relevant statutory requirements and regulatory framework at the time.

6.9 Mitigation, monitoring and enhancement

6.9.1 Mitigation measures are defined in ES Chapter 5 EIA approach and methodology, Volume I, (Document reference 6.1, DCO Volume 6) with primary mitigation and tertiary mitigation for air quality and odour being presented in section 6.4 of this chapter.

Secondary mitigation

6.9.2 With regards to air quality and odour, no secondary mitigation measures are proposed.

Monitoring

6.9.3 The Outline CEMP (Document reference 7.1, DCO Volume 7) secures a requirement that site specific monitoring measures relating to construction dust is undertaken. This includes daily on-site and off-site inspections of dust soiling on nearby receptors, carrying out regular site inspections to monitor compliance with

the Dust Management Plan and agreeing dust deposition, dust flux or real-time PM_{10} monitoring with the relevant local planning authority. This will be undertaken by the person accountable for air quality and dust issues on site during construction and will be recorded within an inspection log. In addition, the monitoring of works including in relation to the control of odour will be undertaken. Additional detail is provided in the Outline CEMP (Document reference 7.1, DCO Volume 7).

6.10 Summary of residual effects

6.10.1 Table 6-33 provides a summary of the residual effects relating to the construction, operation and decommissioning of the Proposed Development with regard to air quality and odour receptors.

Table 6-33 Summary of residual effects

Impact	Receptor	Residual effects		
		Construction	Operation	Decommissioning
Impact 1: Construction dust and fine particulate matter	Human receptors within 250m of the Order Limits (and/or within 50m of HGV routes up to 250m from the Order Limits)	Not significant	Scoped out	Not significant
	Designated ecological features within 200m of the Order Limits (and/or within 50m of HGV routes up to 250m from the Order Limits)	Not significant	Scoped out	Not significant
Impact 2: Construction NRMM emissions	Human receptors and designated ecological features within 200m of the Order Limits	Not significant	Scoped out	Not significant
Impact 3: Construction odour emissions	Human receptors that could potentially be impacted by construction works at the historic landfill at the WRP site	Not significant	Scoped out	Not significant
Impact 4: Construction	Human receptors within 200m of affected roads	Not significant	Scoped out	Not significant

Impact	Receptor	Residual effects		
		Construction	Operation	Decommissioning
road traffic emissions	Designated ecological features within 200m of affected roads	See ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6)	Scoped out	See ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6)

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