AQUIND Limited

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Environmental Statement – Volume 1 – Chapter 23 Air Quality – Low Resolution

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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CONTENTS

TABLES

PLATES

APPENDICES

Appendix 23.1 – Consultation Responses

Appendix 23.2 – IAQM Construction Assessment

Appendix 23.3 – Air Quality Trafic Modelling

Appendix 23.4 – Air Quality Generator Emissions Modelling

Appendix 23.5 – Air Quality Cumulative Effects Assessment Matrix (Stage1&2)

Appendix 23.6 – Air Quality Cumulative Effects Assessment Matrix (Stage3&4)

23. AIR QUALITY

23.1. SCOPE OF THE ASSESSMENT

23.1.1. INTRODUCTION

23.1.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon air quality. The Proposed Development that forms the basis of this assessment is described in Chapter 3 (Description of the Proposed Development) of the Environmental Statement ('ES') Volume 1 (document reference 6.1.3).

23.1.1.2. The air quality assessment considers the potential impacts associated with the following specific activities:

- Construction at the converter station area, including all construction and earthworks, access road and telecoms buildings;
- Horizontal Directional Drilling ('HDD'), and trenching and ducting for the Onshore Cables which will emit fugitive dust and exhaust gases from on-site vehicles and plant, and on-road vehicles for the entire Proposed Development;
- The use of on-road construction vehicles as a source of exhaust gas emissions;
- Road closures and diversions which will cause the redistribution of non-Proposed Development diverted traffic during construction;
- Combustion emissions from diesel fuelled local power generation plant required in connection with HDD operations for drilling, mud recycling and pumping along the Onshore Cable Route; and
- Temporary combustion emissions from backup diesel fuelled local power generation plant in connection with the operation of the Proposed Development at Eastney (Landfall).

23.1.1.3. This chapter assesses the impacts arising from the Onshore Components of the Proposed Development. Refences to the Order Limits and the Site in this chapter, any appendices to it and plans enclosed to it, is only in relation to the Order Limits and the Site as applicable to the Onshore Components as illustrated in Figure 3.9 of the ES Volume 2 (document reference 6.2.3.9) Figure 3.9.

23.1.2. STUDY AREA

23.1.2.1. The study area and identified sensitive receptors with respect to air quality for each Section of the Proposed Development is shown in Figure 23.1. A description of the potential impact within each Onshore Cable Corridor Section is provided below.

Section 1 – Lovedean (Converter Station Area)

23.1.2.2. Section 1 is characterised by its location on the border of the South Downs National Park as shown within Figure 23.1. Within 350 m of the Order Limits are scattered human receptors, the western edge of Lovedean and four areas of designated ancient woodland.

Section 2 – Anmore

23.1.2.3. Section 2 passes through an area of arable agricultural land. There are a small number of residential receptors in this area, however a large number of receptors are present within 350 m of the southern extents of this section in the Anmore area.

Section 3 – Denmead/Kings Pond Meadow

23.1.2.4. Section 3 passes through Anmore and Denmead where substantial numbers of human receptors are present within 350 m of the Order Limits. Denmead Infant School and Denmead Junior School are within 350 m of the Order Limits.

Section 4 – Hambledon Road to Farlington Avenue

23.1.2.5. Section 4 is one of the longest sections of the route, and passes through the residential settlements of Spake, Waterlooville, Purbrooke Heath. Substantial numbers of receptors are within 350 m of the Order Limits along with Waterloo School, Mill Hill Primary School, and Purbrooke Junior and Infant School.

Section 5 – Farlington

23.1.2.6. Section 5 passes through the residential areas of Drayton and Farlington. Substantial numbers of residential receptors are present within 350 m of the Order Limits, as are Solent Infant School and Solent Junior School.

Section 6 – Zetland Field and Sainsbury's Car Park

23.1.2.7. This Section is characterised by residential areas to the east of the A2030 and a commercial area to the west of the A2030. Also present are the Alexandra Rose Nursing Home and Springfield School.

Section 7 – Farlington Junction to Airport Service Road

23.1.2.8. Section 7 crosses the main A27 to the west of the junction with the A2030 and passes directly underneath the Langstone Harbour Site of Special Scientific Interest ('SSSI'), Chichester and Langstone Harbours Special Protection Area ('SPA') and Wetland of International Importance ('RAMSAR'), and the Solent Marine Special Area of Conservation ('SAC'). It also passes within 350 m of the Farlington Marshes Local Nature Reserve ('LNR').

Section 8 – Eastern Road (adjacent to Great Salterns Golf Course) to Moorings Way

23.1.2.9. Section 8 runs directly adjacent to the Langstone Harbour SSSI, Chichester and Langstone Harbours SPA and RAMSAR, and the Solent Marine SAC. Within 350 m of the Order Limits are a large number of residential receptors along with St. Mary's Hospital, St. James Hospital, Miltoncross Academy, Portsmouth College, and the University of Portsmouth Langstone Student Village.

Section 9 – Moorings Way to Bransbury Road

23.1.2.10. This Section passes through a densely inhabited area of the City of Portsmouth, with a large number of residential receptors within 350 m of the Order Limits in addition to:

- Wimborne Junior School;
- Wimborne Infant School;
- Meon Junior School;
- Meon Infant School;
- The Harbour School;
- University of Portsmouth/Langstone Student Village;
- St James Hospital;
- Moorings Way Infant School;
- The Harbour School;
- Miltoncross Academy;
- Meon Junior School;
- Mary Rose Academy; and
- Milton Park Primary School.

Section 10 – Eastney (Landfall)

23.1.2.11. Section 10 passes through residential areas and coastal leisure areas. The Solent Marine SAC is within 50 m of the Order Limits.

23.1.2.12. Table 23.1 provides a summary of the potential impacts anticipated at each of the Onshore Cable Corridor Sections.

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Table 23.1 Potential Construction Air Quality Impacts Per Onshore Cable Corridor Section

Impact	1 – Lovedean (Converter Station	2 – Anmore	3 – Denmead/Kings Pond Meadow	4 – Hambeldon Road to Farlington Avenue	5 – Farlington	6 – Zetland Field Sainsbury's Car	7 – Farlington Junction to Airport	8 – Eastern Road (adjacent to Great	9 – Moorings Way to Bransbury Road	10 – Eastney (Landfall)
Air quality and amenity impacts as a result of emissions from site construction activities and on-road construction vehicles and plant	●	●	●	●	●	●	●	●	●	●
Air quality impacts of emissions from on-road construction vehicles		●	●	●	●	●	●	●	●	●
Air quality impacts of emissions from diverted traffic		●	●	●	●	●	●	●	●	●
Air quality impacts as a result of emissions from local power generation for HDD works			●			●	●	●	●	●
Ecological impacts of local power generation for Onshore Cable installation (including HDD)							●	●	●	●

23.2. LEGISLATION, POLICY AND GUIDANCE

23.2.1.1. This assessment has taken into account the current legislation, policy and guidance relevant to air quality. These are listed below.

23.2.2. LEGISLATION

Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

23.2.2.1. The Directive sets out the agreed limit values for selected pollutants and the agreed obligations for national governments with regards to improving and maintaining the quality of air.

The Air Quality Standards Regulations 2010

23.2.2.2. The Air Quality Standards Regulations 2010 transcribe the limit values and obligations from EU Directive 2008/50/EC into English law. The Regulations also set out the requirements for exposure reduction of $PM_{2.5}$ within the general population and the requirements for action to be taken when levels of air pollutants persistently exceed the limit values. The Regulations were amended in 2016 to clarify references to EU law and to clarify the requirements for the monitoring of air pollutants and the reporting of national air quality.

Environment Act 1995

23.2.2.3. The Environment Act 1995 requires the UK Government and Devolved Administrations to produce the national Air Quality Strategy for England, Scotland, Wales and Northern Ireland ('AQS') containing standards, objectives and measures for improving air quality, and to keep these policies under review. The objectives and standards applied in this assessment are shown in Table 23.2.

Table 23.2 – National Air Quality Limits and Objective Values

Pollutant	Objective/ Target Value*	Measure as	Date to be achieved by and maintained thereafter		
			AQS	Regulations	2008/50/EC
Particulate matter (mean aerodynamic diameter ≤10µm) (PM_{10})	50 µg/m^3 Not to be exceeded more than 35 times a year	24-hour mean	31-Dec-04	31-Dec-04	1-Jan-05
	40 µg/m^3	Annual mean	31-Dec-04	31-Dec-04	1-Jan-05

Pollutant	Objective/ Target Value*	Measure as	Date to be achieved by and maintained thereafter		
			AQS	Regulations	2008/50/EC
Particulate matter (mean aerodynamic diameter ≤2.5µm) ($PM_{2.5}$)*	25 µg/m^3	Annual Mean	31-Dec-20	31-Dec-20	1-Jan-10
	Target of 15% (AQS) and 20% (2008/50/EC) reduction in urban areas	Annual Mean	1-Jan-10 to 31-Dec-20	1-Jan-10 to 31-Dec-20	1-Jan-10 to 31-Dec-20
Nitrogen dioxide (NO_2)	200 µg/m^3 Not to be exceeded more than 18 times a year	1-hour mean	31-Dec-05	31-Dec-05	1-Jan-10
	40 µg/m^3	Annual mean	31-Dec-05	31-Dec-05	1-Jan-10
Nitrogen oxides (NO_X)	30 µg/m^3	Annual mean	31-Dec-00	31-Dec-00	19-Jul-01
Carbon monoxide (CO)	10 mg/m^3	Maximum daily running 8 hour mean	31-Dec-03	31-Dec-03	01-Jan-05
Benzene (C_6H_6)	16.25 µg/m^3	Running annual mean	31-Dec-03	-	-
	5 µg/m^3	Annual mean	31-Dec-10	31-Dec-10	01-Jan-10

Environmental Protection Act 1990

23.2.2.4. Fugitive emissions are controlled via the Environmental Protection Act 1990 ('EPA') as a statutory nuisance. The following relevant matters as identified as giving rise to statutory nuisances in accordance with section 79 of the EPA:

- Smoke emitted from premises so as to be prejudicial to health or a nuisance;
- Fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;
- Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance;
- Any accumulation or deposit which is prejudicial to health or a nuisance; or
- Any other matter declared by any enactment to be a statutory nuisance.

23.2.2.5. Statutory nuisance can be detected as a result of periodical inspection by the local authority as part of their statutory duty, or as a result of a complaint investigated by the local authority. Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or reoccur, then it may serve an Abatement Notice requiring that the nuisance activity ceases, or that works to facilitate its abatement are untaken, and stipulate the time period in which this should be completed.

23.2.3. PLANNING POLICY

23.2.3.1. The following provides a summary of the relevant national planning policy.

National Policy

National Policy Statement

23.2.3.2. The Overarching National Policy Statement for Energy (EN-1) makes reference to issues of air quality on the basis of emissions from generating stations or plant and discusses the potential for eutrophication of habitats as a result of nutrient deposition from emissions. This is not directly relevant to the air quality impacts of the Proposed Development as not power generation is being undertaken.

National Planning Policy Framework

23.2.3.3. The National Planning Policy Framework , whilst not containing policies specific to major energy projects to be consented via the Planning Act 2008, may still be of relevance to the determination of an application by the Secretary of State.

23.2.3.4. The NPPF provides that planning policies should contribute towards compliance with the relevant limit values or national objectives for air pollutants with reference to conserving and enhancing the natural environment. Opportunities to improve air quality or mitigate development effects through measures such as green infrastructure provision should be taken where possible appropriate at the planning stage.

Clean Air Strategy 2019

23.2.3.5. The UK Government produced a Clean Air Strategy . The strategy set out the actions the government would take to help ensure the delivery of clean air to the relevant EU standards within the shortest possible timeframe. In the strategy the government committed to improving energy efficiency and phasing out fossil fuel power generation.

Local Policy

23.2.3.6. The following provides a summary of the relevant local planning requirements for each of the local authorities affected.

Portsmouth City Council

23.2.3.7. Policy PCS14 of the Local Plan states that "The council will work to create a healthy city and improve the health and well-being of its residents by… improving air quality in the city through implementing the councils Air Quality and Air Pollution SPD (Supplementary Planning document) and Air Quality Action Plan".

23.2.3.8. The Local Plan states that air quality has improved in the city with eight of the city's 13 Air Quality Management Areas revoked since 2006.

23.2.3.9. The Air Pollution SPD outlines the requirement for an air quality assessment where a development may have an effect on local air quality. The SPD specifically refers to the development phase where the effects of demolition and construction may have a temporary effect on local air quality, however does not go into detail on the required level of assessment.

Havant Borough Council

23.2.3.10. The Local Plan (Core Strategy) and the Local Plan (Allocation) details air quality in policy DM10 Pollution and states development proposals will be permitted where:

- Development that may cause pollution of water, air or soil or pollution through noise, smell, smoke, fumes, gases, steam, dust, vibration, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can be met:
    - 1. The health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk.
    - 2. National air quality standards or objectives would not be breached.
    - 3. The water environment would not be detrimentally affected.
    - 4. It would not lead to an unacceptable deterioration in the quality or potential yield of coastal, surface and ground water resources.
    - 5. External lighting is of the minimum level of illumination and duration required for security and operational purposes.

- 6. External lighting would not interfere with safe navigation in either Chichester or Langstone Harbours and other coastal locations.

Winchester City Council

23.2.3.11. The Winchester District Local Plan policy DS1 states that development will be expected to demonstrate that it can address the impact on air quality in order to be considered for approval by the council. Reference is made to air quality specifically in relation to traffic impacts.

East Hampshire District Council

23.2.3.12. The East Hampshire Joint Core Strategy refers to air quality specifically in relation to traffic pollutants. As part of Policy CP27 Pollution, any development that may have a negative effect on an EU designated ecological site should be subject to an appropriate assessment under the Habitats Regulations , and will require a monitoring programme to be set up as part of the mitigation measures.

Hampshire County Council

23.2.3.13. Air quality issues are devolved to district and local councils, and as such Hampshire County Council has no policies with respect to air quality.

23.2.3.14. Hampshire County Council is currently running a Commission of Inquiry into the issues facing the county up to the year 2050, in which air quality is mentioned under the theme of Environment and Quality of Place with reference to improving public health.

23.2.4. GUIDANCE

23.2.4.1. The following guidance has been used to screen and assess potential impacts resulting from the Proposed Development:

- **Guidance on the assessment of dust from construction and demolition v1.1** . The guidance provides an advised procedure for a semi-quantitative dust risk assessment and screening criteria for the activities undertaken on-site. Mitigation measures are suggested based on the assessed risk, and these should be added to a Dust Management Plan, for which content is also suggested.
- **Guidance on Monitoring in the Vicinity of Demolition and Construction Sites v1.1** . This guidance from Environmental Protection UK and the IAQM provides on the appropriate level of monitoring relevant to the specific site characteristics and the assessed dust risk of the works. Different types of monitor are discussed along with advised levels of action in respect of monitored concentrations.
- **Land Use Planning and Development Control: Planning for Air Quality** . The guidance from the IAQM provides screening criteria and content advice for detailed assessments. The guidance also provides criteria for the measurement of significance of impacts from based on baseline air quality, pollutant limit values and predicted changes in concentrations.

- **A guide to the assessment of air quality impacts on designated nature conservation sites v1.0** . The guidance from the IAQM clearly separates the roles of the air quality specialist and ecologist in the activities involved during the assessment of impacts and effects of air quality on designated sites. Screening criteria for different types of assessment are outlined, along with the steps to be taken at each stage of the assessment. Whilst the precautionary approach is advised, assessments should also be appropriate to the risk involved.
- Advice note six: Preparation and submission of application documents.

23.3. SCOPING OPINION AND CONSULTATION

23.3.1. SCOPING OPINION

23.3.1.1. As detailed within Chapter 4 (EIA Methodology) (document reference 6.1.4), a Scoping Opinion was received by the Applicant from PINS (on behalf of the SoS) on 7th December 2018.The key points raised in the Scoping Opinion were as follows:

- PINS agreed that an operational traffic emissions assessment could be scoped out of the ES;
- PINS noted that only a qualitative assessment of construction impacts was proposed and that emissions from construction vehicles was scoped out. PINS agreed with this opinion on the basis that if screening revealed that construction traffic exceeded the Institute of Air Quality Management ('IAQM') screening criteria , then a quantitative assessment of those impacts should be undertaken.

23.3.1.2. Following the receipt of the Scoping Opinion from PINS, more detailed information has become available regarding the exact nature of the construction and final operation of the Proposed Development. Following screening and analysis of this data, quantitative assessment is now being undertaken on the effects of construction and operational effects.

23.3.1.3. Appendix 23.1 (Consultation Responses) of the ES Volume 3 (document reference 6.3.23.1) includes the full responses to the PINS EIA Scoping Opinion.

23.3.2. CONSULTATION PRIOR TO PEIR

23.3.2.1. No further consultation was completed prior to the PEIR.

23.3.3. STATUTORY CONSULTATION

23.3.3.1. East Hampshire District Council, Winchester City Council, Havant Borough Council and Portsmouth City Council were consulted on the content of the EIA Scoping Report. The responses are reported in Appendix 23.1 (Consultation Responses) and are summarised as follows:

- East Hampshire District Council - no further comments to add.

- Winchester City Council – agreement with scope contained in the EIA scoping report
- Havant Borough Council – no further comments to add.
- Portsmouth City Council – Environmental Health agreed that there will be no Operational Stage emissions to air, and the council ecologist requested that air quality impacts on ecologically sensitive receptors are captured beyond 50 m of the site boundary and construction traffic routes in the assessment.

23.3.3.2. In response to the statutory consultation, it was determined that emissions during the Construction Stage and the introduction of potential pollutants will be addressed in the Onshore Outline Construction Environmental Management Plan (CEMP) (document reference 6.9*)* and further in the detailed Construction Management Plans for the individual phases of the Proposed Development.

23.3.4. PEIR CONSULTATION

23.3.4.1. Appendix 23.1 (Consultation Responses) includes a full description of the consultation completed on the PEIR, a summary of which is provided below:

- Denmead Parish Council – regarding information provided about what will be emitted to air from the convertor station site;
- Historic England – impact on dust emissions on amenity in local Conservation Areas;
- East Hampshire District Council – the assessment of impacts to ancient woodland from construction dust, trackout emissions and an assessment update;
- Hampshire County Council – traffic impacts and intra-project effects; and
- Portsmouth City Council – compliance with air quality criteria on the routes A3 and A2047 which are subject to ministerial directives and the need to consider alternative construction traffic routes.

23.3.5. POST PEIR CONSULTATION

23.3.5.1. Appendix 23.1 (Consultation Responses) includes a full description of the consultation completed with the local planning authorities (LPAs) post-PEIR, a summary of which is provided below:

- East Hampshire District Council – confirmation that the assessment of concentration changes from diverted traffic and construction traffic should be included;
- Winchester City Council - no comment on the proposal sent following screening of the traffic dataset to assess emissions from construction and diverted traffic;

- Havant Borough Council – specific areas within the borough were identified as key receptors for inclusion in the assessment of construction and diverted traffic. these are:
- Numbers 2 and 4 Bedhampton Hill as representative of the area around Portsdown Road;
- 262 Stakes Hill Road, as representative of the area around Stakes Road/Stakes Hill Road/Crookhorn Lane/Purbrook way;
- 32 Hurstville Drive as representative of the area around Hurstville Drive/Stirling Avenue; and
- 54 Westbrook Road, representative of the area around Aldermoor Road/Woodlands Grove/Elizabeth Road.
- Portsmouth City Council – provided comments on the proposal to assess emissions from construction and diverted traffic and requested an assessment of operational emissions from the back-up generators associated with the Optical Regeneration Stations (ORS), with the results described in Section 23.6.8.

23.3.5.2. Full details of consultation undertaken to date is presented within the Consultation Report (document reference 5.1).

23.3.6. ELEMENTS SCOPED OUT OF THE ASSESSMENT

23.3.6.1. The elements shown in Table 23.3 were not considered to give rise to likely significant effects at Scoping as a result of the Proposed Development and have therefore not been considered within the ES:

Table 23.3 – Topics and elements scoped out of the assessment at Scoping

Element Scoped Out	Justification
Operation Traffic Effects	Operational traffic effects are scoped out on the basis that traffic flows will not be affected by the installation of the Onshore Cables, and no road realignments are proposed. Traffic associated with the maintenance and operation of the Converter Station is not expected to be significant.
Operational Emissions	Operational emissions are scoped out on the basis that the Onshore Cables and Converter Station do not cause any emissions to air as part of their operation.
Operational Odour Emissions	Operational odour emissions are scoped out on the basis that the Onshore Cables and Converter Station do not cause any odorous emissions to air as part of their operation. Emissions of sulphur hexafluoride (SF_6), used in Gas Insulated Switchgear, are addressed in Chapter 28 Carbon and Climate Change (document reference 6.1.28).

23.3.7. IMPACTS SCOPED IN TO THE ASSESSMENT

Construction Stage

23.3.7.1. A review of the evolving Construction Stage methodology since the PEIR has yielded new details of the plant and equipment likely to be employed by the appointed contractor during the installation of the Onshore Cable (including HDD operations). It was determined that local power generation, fuelled through the combustion of diesel, is a potentially significant source of local air pollution with the potential to impact human health.

23.3.7.2. The following impacts are considered to have the potential to give rise to significant effects during construction of the Proposed Development and have therefore been considered within the ES:

- Amenity and air quality effects resulting from the following construction activities:

- Demolition (Any activity involved with the removal of an existing structure (or structures). This is taken to include removal of any solid surface material, e.g. asphalt or concrete, as part of trenching works):
- Earthworks
- Construction; and
- Trackout.
- Air quality effects resulting from the following construction activities:
- Generated construction traffic emissions using prescribed routes required to complete on-site activities;
- Non-construction related traffic emissions using alternative routes as a result of diversions, road closures and other traffic management;
- Combustion of diesel as fuel to power generators required to support the following Onshore Cable laying activities (including HDD operations):
- Drilling (380 kVA rig):
- Mud recycling (350 kVA generator)
- High pressure pumping (540 kVA); and
- Welfare (50 kVA).

Operational Stage

23.3.7.3. The following impacts are considered to have the potential to give rise to likely significant effects during operation of the Proposed Development and have therefore been considered within the ES:

- Air quality impacts resulting from the combustion of diesel as fuel for generators required to provide backup power (2*200 kVA) for the ORS. The operation of these is expected to be more than six occasions per year for no more than 24 hours at a time, with a single annual test for one hour to ensure efficient operation of the backup generators.

Decommissioning Stage

23.3.7.4. With the exception of the Onshore Cable where it is anticpated the cable ducts will be left in-situ and the cables removed via the Joint Bays, impacts during decommissioning are expected to be of a similar magnitude and impact to the construction of the Proposed Development, as the works will be of asame type and scale.

23.4. ASSESSMENT METHODOLOGY

23.4.1.1. The main air quality effects of the Proposed Development are expected to be temporary in nature and largely limited to construction effects only. However, the proposed use of back-up power generators at Eastney (Landfall) during operation means that a methodology for assessing permanent effects has also been applied.

23.4.1.2. Decommissioning is expected to have similar temporary effects on air quality and so is considered to be of a similar nature to the construction effects, as described in Section 23.6. Therefore, no assessment methodology specific to decommissioning was required.

23.4.2. BASELINE DATASETS

23.4.2.1. The following, freely available datasets were used in the assessment of temporary and permanent effects:

- Background air quality from the Defra Background air quality archive ;
- Air quality monitoring data collected by Portsmouth City Council and Havant Borough Council;
- Local Air Quality Management (LAQM) reports from Portsmouth City Council, Havant Borough Council, East Hampshire District Council and Winchester City Council;
- British Geological Society 1 km Soil Parent Material spatial dataset as part of the construction dust assessment; and
- Natural England ecologically designated area spatial datasets for Ramsar Sites, SPA, SAC, SSSI, LNR and National Parks .

23.4.2.2. The following Ordnance Survey ('OS') datasets were used to identify receptors for the assessment:

- OS AddressBase Plus; and
- OS Mastermap Topography.

23.4.2.3. Data on the spatial extents of the works and methodologies used were obtained from Chapter 3 Description of the Proposed Development (document reference 6.1.3).

23.4.2.4. Traffic impacts resulting from the Proposed Development were modelled using the Solent Sub-Regional Transport Model, which is a multi-modal strategic transport model for Hampshire, the Isle of Wight and Portsmouth. The model is operated by the Systra consultancy under contract to Solent Transport. The model includes calibrated 2015 baseline flows.

23.4.2.5. The traffic assessment study area incorporates an approximate 5 km area around the Order Limits, incorporating Denmead, Southwick and Cosham to the west and the A3(M) corridor to the east between Junction 1 (Horndean) and where it meets the A27 (Bedhampton). To provide a robust assessment the study area also includes all of Portsea Island and motorway between M27 Junction 12 to the west and A27 junction with A3(M) to the east. This data was screened against the IAQM assessment criteria as detailed in Appendix 23.3 (Air Quality Traffic Modelling).

23.4.2.6. Construction traffic assessment was undertaken based on information obtained from the engineering team and Appendix 22.2 (Framework Construction Traffic Management Pan) ('CTMP') of the ES Volume 3 (document reference 6.3.22.2) and using the Systra traffic modelling. Construction site activity data were screened for inclusion in the assessment according to the IAQM dust assessment guidance criteria. Construction traffic data were screened for inclusion against the IAQM planning guidance criteria as advised in the IAQM dust assessment guidance.

23.4.3. CONSTRUCTION STAGE

Construction Site Activities

23.4.3.1. Construction Stage effects were assessed following the IAQM Guidance on the assessment of dust from demolition and construction for the potential effects described in Section 23.6. This is an iterative, semi-quantitative approach based on baseline parameters such as background air quality, underlying soil type, cumulatively banded numbers of receptors at set distances from the Proposed Development, the estimated scale of the works, and the construction methodology for the various stages of the work.

23.4.3.2. The IAQM Dust Risk Assessment procedure involves 5 specific steps aimed at identifying site specific criteria in order to assign a semi-quantitatively determined risk to the activities being undertaken on site.

- Step 1 is to screen the requirement for a detailed assessment.
- Step 2 is to assess the risk of dust impacts, which is done for each of the four types of activity undertaken on-site (demolition, earthworks, construction and trackout, and is broken down into three elements.
- Step 2A is an assessment of the scale and nature of the works;
- Step 2B assesses the potential sensitivity of the area; and
- Step 2C determines the risk of dust impacts for each of the four activities undertaken on site, and the provides an overall dust risk. Dust risks are described as low, medium or high risk for each of the four activity categories. Where there is uncertainty regarding the level of risk associated with the activity, a precautionary approach is taken with the higher risk category being applied.

- Step 3 is to determine site specific mitigation for each of the activities assessed at Step 2;
- Step 4 is to examine the residual effects and determine whether or not these are significant; and
- Step 5 is to prepare a dust management plan, which will be incorporated as part of this document.

23.4.3.3. A detailed assessment is required where a sensitive human receptor is located within 350 m from the site boundary and/or within 50 m of the route(s) used by vehicles on the public highway, up to 500 m from the site entrance(s).

23.4.3.4. A detailed description of the IAQM Dust Risk Assessment procedure applied in the assessment is provided in Appendix 23.2 (IAQM Construction Assessment) of the ES Volume 3 (document reference 6.3.23.3).

Road Closures, Diversions and Construction Traffic

23.4.3.5. Modelling was undertaken using the traffic flow data provided by Systra for road closures and diversions which is assessed in the Transport Assessment (document reference 6.3.22.1) and Chapter 22 Traffic and Transport (document reference 6.1.22) from a transport impact perspective. Additional data was sourced from Chapter 22 Traffic and Transport (document reference 6.1.22) for the flow volumes and routes for construction traffic. This data has been used to represent traffic flow conditions for the 2026 Do-Minmimum scenario, and two 2026 Do-Something scenarios representing northbound and southbound road closures on the A2030.

23.4.3.6. Traffic flows relating to road closures and diversions were screened against the criteria from the IAQM planning guidance as detailed in Table 23.4.

Table 23.4 - IAQM Traffic Screening Criteria

Vehicle Type	Flow Change	Flow Change within or adjacent to Air Quality Management Area ('AQMA')
Light Duty Vehicle (LDV) <3.5t	500	100
Heavy Duty Vehicle ≥3.5t (HDV)	100	25

23.4.3.7. The same screening criteria were applied to the construction traffic data and a decision was taken to model all of the construction traffic routes regardless of flow due to air quality sensitivities within the City of Portsmouth. Judgements of significance for non-construction related traffic diversions and construction traffic activities are made separately due to the differing spatial nature of their impacts and the relation of construction traffic to the construction dust risk assessment. The study area for non-construction related traffic covers a large part of the City of Portsmouth, including five out of six AQMAs, and specific areas of Havant and East Hampshire that are out of the study area for the construction dust risk assessment and construction traffic assessment. The final judgement of significance for traffic in the construction stage of the Proposed Development is based on the non-construction traffic flows because they are larger than generated construction traffic.

23.4.3.8. Three scenarios are provided from Chapter 22 Traffic and Transport (document reference 6.1.22) as follows:

- 2026 Do-Minimum which outlines conditions without construction of the Proposed Development;
- 2026 Do-Something 1 (DS1) which incorporates cable works at six locations and lane closures on the southbound carriageway of the A2030 Eastern Road; and
- 2026 Do-Something 2 (DS2) which incorporates cable works at six locations and lane closures on the northbound carriageway of the A2030 Eastern Road.

23.4.3.9. Traffic data representing the Do-Minimim and both Do-Minimum scenarios, were modelled using Cambridge Environmental Research Consultants (CERC) Atmospheric Dispersion Modelling System for roads (ADMS-Roads) version 4.1.1 using emission rates derived from the Department for Transport Emissions Factor Tables (EFT) v9 and geographical locations for each road link taken from the modelling spatial data provided by Systra. Further discussion on the vehicle emission rates applied in the assessment is provided in Appendix 23.3 Air Quality Traffic Modelling.

23.4.3.10. Concentrations were modelled at representative receptor points at distances of 4m (for EU compliance), 20 m, 70 m, 115 m and 175 m from each link, and receptors from the OS AddressBase Plus dataset assigned a representative receptor according to their nearest traffic link and their location within distance bandings of 50 m, 100 m, 150 m and 200 m from each link. Beyond a distance of 200 m pollutants resulting from traffic flows are expected to have dispersed such that concentrations are at background levels.

23.4.3.11. A detailed description of the modelling procedure for road closures, diversions and construction traffic is provided in Appendix 23.3 (Air Quality Traffic Modelling) including meteorological data, NO_x to NO_2 conversion, background data and model verification.

Local Power Generation for HDD Operations

23.4.3.12. Modelling was undertaken using information provided by the WSP Engineering and High Voltage Direct Current ('HVDC') Cabling Teams, and specialist advice regarding HDD works.

23.4.3.13. The information in Table 23.5 was provided for the HDD drilling operations.

Table 23.5 - Emissions data for the HDD drilling generator model.

	Pump	Recycling*	Welfare**	PowerPack
Exhaust Mass Flow (m^3/min)	31.8	30.3	13.0	37.3
Exit Velocity (m/s)	2.51	5.76	2.99	4.95
Exhaust Temperature (°C)	546.7	486.6	540.0	485.7
Exhaust Diameter (m)†	0.152	0.152	0.152	0.152
NO_x (mg/Nm^3)	0.09	0.106	0.004	0.20
CO (mg/Nm^3)	0.070	0.042	0.056	0.070
Hydrocarbons (mg/Nm^3)	0.002	0.006	0.002	0.003
Particulate Matter (mg/Nm^3)	0.006	0.010	0.0003	0.009

**** Emissions for the recycling plant were not supplied, so were derived from the data sheet for the PowerPack.***

***** Emissions for the Welfare generator were not supplied, so were derived from a standard 50 kVA generator.***

† The reference exhaust diameter for the PowerPack was used for all emissions sources as no other information was supplied.

23.4.3.14. Following consultation with a drilling specialist, air quality modelling was undertaken at four out of the six drilling locations due to the availability of information on the equipment that would be used on-site and the fact that any appointed drilling contractor might sub-contract or hire specific equipment for the smaller drilling operations. At this stage it is not considered that the smaller drilling operations would

constitute a significant change in local air pollutant concentrations, and therefore this approach to the assessment is considered robust. Therefore, two locations were not assessed.

23.4.3.15. Pollutant concentrations were predicted at the discrete receptors described in Appendix 23.4 (Air Quality Generator Emissions Modelling). The relevant national air quality limits and objective values are prescribed in the national AQS as described in Table 23-2.

23.4.3.16. The following pollutants were modelled in the assessment:

- Nitrogen oxides (NO_x)
- Nitrogen dioxide (NO_2)
- Carbon monoxide (CO)
- Particulate matter (PM_{10})
- Total hydrocarbons (THC)

23.4.3.17. SO_2 is not assessed because ultra-low sulphur diesel will be used. Exhaust gas concentrations of general particulate matter were provided. Therefore, $PM_{2.5}$ is assumed to equal PM_{10} for comparison with the target value. This represents a conservative approach because the exhaust gas concentration of the finer particle fraction $PM_{2.5}$ will be lower than PM_{10}. THC were modelled as benzene which represents a conservative approach because no objective or limit value exists for THC. Therefore, benzene was selected for modelling as a limit value is prescribed for this particular hydrocarbon pollutant as shown in Table 23-2. It should be noted however that the toxicity of benzene in air is of a different nature to THC, particularly as benzene is a documented carcinogen. Therefore, the equivalent level of carcinogenesis should not be inferred from the results presented here.

23.4.4. OPERATION STAGE

FOC Back-Up Power Generation

23.4.4.1. Detailed information regarding the installation of the backup power generators at the ORS was unavailable due to the stage of the design. Specifications for the backup generators ranged from two 50 kVA generators to two 200 kVA generators. Modelling was undertaken for two 200 kVA generators as a conservative approach.

23.4.4.2. In the absence of detailed emissions information, the maximum emissions data from the EU Stage VI Q emissions standards were used, as shown in Table 23.6. As a new generator installation after construction in 2026, the generator will be required to meet this standard at a minimum, assuming no more stringent emissions standards during the intervening period are introduced.

Table 23.6 - EU Stage IV Emissions Standards

Cat.	Net Power	Date (on sale)	CO	HC	NOx	PM
	kW		g/kW			
Q	130 ≤ P ≤ 560	January 2014	3.5	0.19	0.4	0.025

23.4.4.3. The following additional data was used based on sample generator data sheets provided:

- Exhaust diameter – 0.15 m (assumed based on HDD generators);
- Exhaust mass flow – 35.8 m³/min; and
- Exhaust temperature – 561 °C.

23.4.4.4. An assessment of ambient NO_x impacts on the relevant designated ecological sites was undertaken following the IAQM designed site assessment guidance . Two transects of 200 m in length were selected according to the prevailing wind directions. Transect SSSI1 was placed directly north of the ORS perpendicular to the border of the SSSI, and transect SSSI2 was placed directly east of the ORS perpendicular to the border of the SSSI. Points were modelled at 10 m intervals along the 200 m transects. Concentrations of ambient NO_x were assessed against the 30 µg/m^3 annual average objective for the protection of vegetation and ecosystems as a screening criterion for further assessment.

23.4.5. DECOMMISSIONING

23.4.5.1. The methodology for assessing the air quality effects of decommissioning is the same as that described for the Construction Stage.

23.4.6. SIGNIFICANCE CRITERIA

23.4.6.1. In determining the significance of a potential effect, the magnitude of impact arising from the Proposed Development is correlated with the sensitivity of the particular environmental attribute or process under consideration.

Magnitude

23.4.6.2. The magnitude relates to the level at which the receptor will be impacted, using the duration of the impact, timing, scale, size and frequency to determine the magnitude of the impact to each receptor. Magnitude of impact is evaluated in accordance with the definitions set out in Table 23.7 below. The definitions of magnitude are generic and may be more specific for some receptors. Any deviations from these definitions have been included in the assessment chapters where relevant.

Table 23.7 - Definitions of 'magnitude' of impact

Magnitude of Impact	Definition
High	Total loss or major alteration to key elements/features of the baseline (i.e. pre-development) conditions.
Medium	Partial loss or alteration to one or more key elements/features of the baseline (i.e. pre-development) conditions.
Low	Minor shift away from baseline (i.e. pre-development) conditions.
Negligible	Very slight change from baseline (i.e. pre-development) conditions.

23.4.6.3. Specific to air quality is the use of impact descriptors from the IAQM Planning guidance . These are assigned based on the predicted long-term pollutant concentration at the receptor as a percentage of the limit value for the relevant pollutant (Air Quality Assessment Limit (AQAL)) and the percentage change in predicted pollutant concentration as a percentage of the AQAL. These are detailed in Table 23.8.

Table 23.8 - IAQM Impact Descriptors

Long-term average concentration at receptor in assessment year	Percentage change in concentration relative to AQAL			
	1	2 - 5	6 – 10	> 10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Value/Sensitivity

23.4.6.4. As described within Chapter 4 (EIA Methodology) of the ES Volume 1 (document reference 6.1.4), sensitivity is a means to measure how sensitive an affected receptors/processes and/or the receiving environment is to change. The sensitivity is assigned at the receptor/process level. This may be defined in terms of quality, value, rarity or importance, and be classed as negligible, low, medium, or high.

23.4.6.5. With particular reference to air quality, all receptors that are exposed to air pollutants for a period commensurate with the relevant limit or objective value for a pollutant are considered highly sensitive receptors. Whilst the legal limit values and AQS objective values are in place, it is widely recognised that pollutants related to construction and the products of combustion can be considered non-threshold pollutants, i.e. there is no safe exposure limit below which there is no potential for any kind of health impact.

23.4.6.6. Receptors that are considered for this assessment include:

- Residential receptors;
- Commercial receptors, e.g. places of work; and
- Community receptors, e.g. churches, community centres.

23.4.6.7. Receptors that merit particular attention due to the relative vulnerability of people who may occupy them include:

- Hospitals;
- Hospices;
- Residential care homes; and
- Schools, nurseries, and other places of education where children or young people are present.

Significance

23.4.6.8. For the asserssment of temporary effects from construction site activities, the IAQM recommends that significance is only assigned to the effect after considering the construction activity with mitigation. With the implementation of effective mitigation commensurate to the risk, the guidance states that residual effects are normally insignificant.

23.4.6.9. For the assessment of construction traffic and combustion plant emissions (construction and operation), the significance of effects is classified using the matrix shown in Table 23.9 which takes into account the assignment of magnitude detailed in Table 23.7 and Table 23.8 as appropriate for the impacts to be determined and the sensitivity of the particular recpetors affected. Effects deemed to be significant for the purpose of assessment are those which are described as 'major' and 'moderate/major'. In addition, 'moderate' effects can also be deemed as significant. Whether they do so shall be determined by a qualitative analysis of the specific impact to the environment and will be based on professional judgement. If/where this is the case, the basis for any judgement will be outlined.

Table 23.9 - Matrix for classifying the significance of effects

		Sensitivity of receptor/receiving environment to change			
		High	Medium	Low	Negligible
Magnitude of Change	High/Substantial	Major	Major to Moderate	Moderate	Negligible
	Medium/ Moderate	Major to Moderate	Moderate	Minor to Moderate	Negligible
	Low/Slight	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

23.4.7. ASSUMPTIONS AND LIMITATIONS

23.4.7.1. The following assumptions and limitations apply to the assessment of construction effects:

- The assessment was undertaken using the Order Limits;
- The assessment is based on information provided by the engineering teams and obtained from drawings and engineering documents produced up to the end of August 2019;

- The assessment of construction traffic effects is based on the data provided by Systra used for the purposeof the Transport Assessment (document reference 6.3.22.1) and discussed in Chapter 22 (Traffic and Transport) (document reference 6.1.22);
- The assessment of road traffic emissions for generated construction traffic and non-construction related traffic are mutually exclusive. Therefore, the impacts assessed from these emission sources are reported separately.
- Counts of affected receptors are based on the accuracy of available OS data;
- The calculation of emissions from the HDD related generators is based on a 12-hour working day, between the hours of 0700 and 1900 for all sources. However, the evolving project description indicates that operations will be for 24-hours under the West Coastway Railway Line and under Langstone Harbour;
- Emissions calculations for the HDD generators were based on the information supplied. Where this was insufficient for assessment, assumptions were made based on information supplied for other generators involved in the HDD operation; and
- Assessment of the emissions from the ORS backup generators was based on continuous operation in order to derive 24-hour and 1-hour maximum possible concentrations.

23.5. BASELINE ENVIRONMENT

23.5.1. SECTIONS

23.5.1.1. Modelled background pollutant concentrations were obtained from the Defra Background Air Quality archive using the latest available 2017-base year maps. An average concentration for the relevant background pollutant concentrations has been taken within a 600 m buffer of the of the Order Limits for each relevant Onshore Cable Corridor Section.

23.5.1.2. The Defra background concentration data show that a large proportion of the background particulate concentrations are made up from secondary produced particulates and sea salt.

Section 1 – Lovedean (Converter Station Area)

23.5.1.3. Modelled background concentrations of PM_{10} are shown in Plate 23.1.

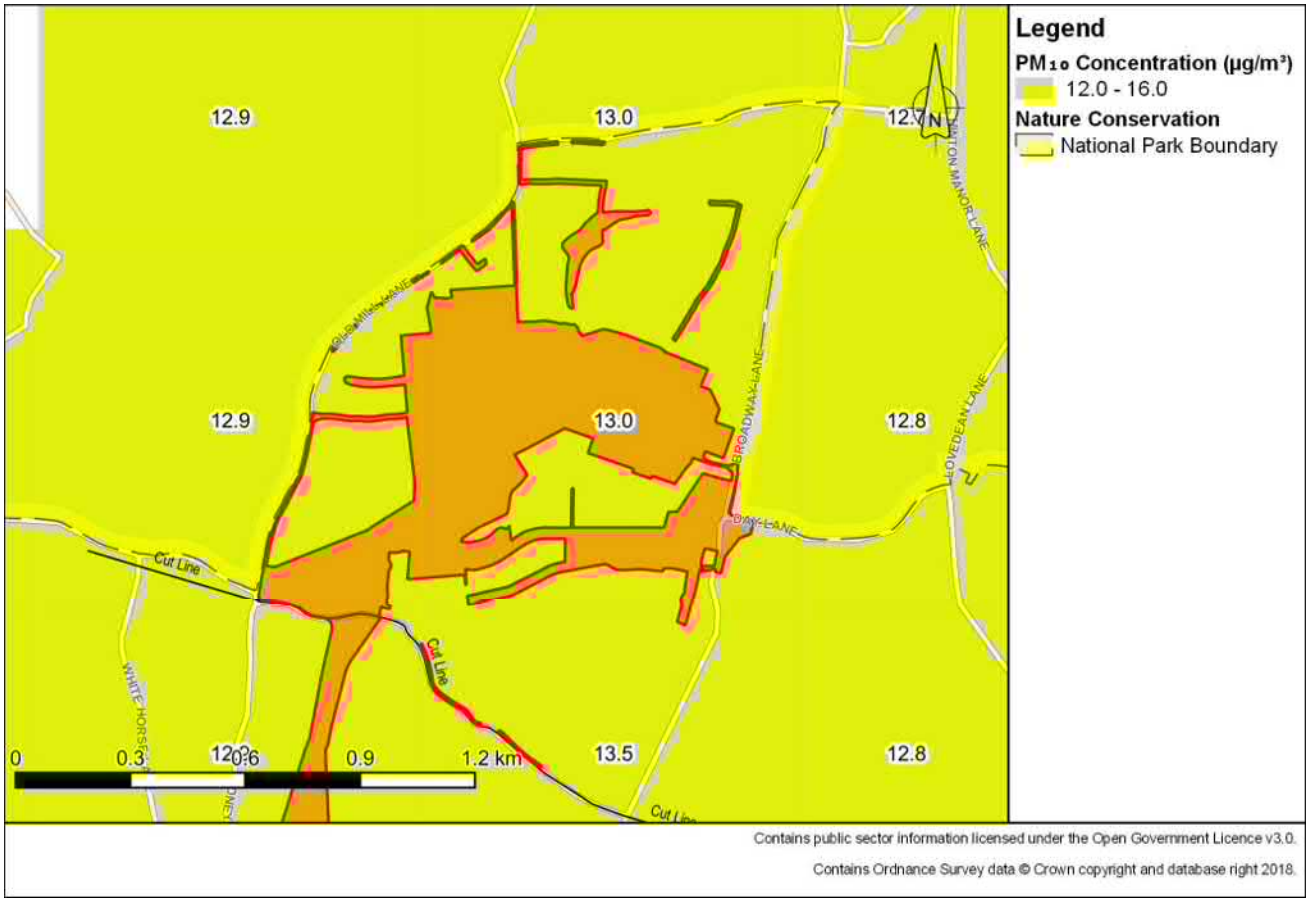

Plate 23.1 – Section 1 PM_{10} Concentrations

23.5.1.4. Plate 23.1 shows that background concentrations of PM_{10} are generally low, being below 50 % of the objective and limit value. The average concentration over this Section is 12.8 µg/m³.

23.5.1.5. Modelled background concentrations of $PM_{2.5}$ are shown in Plate 23.2.

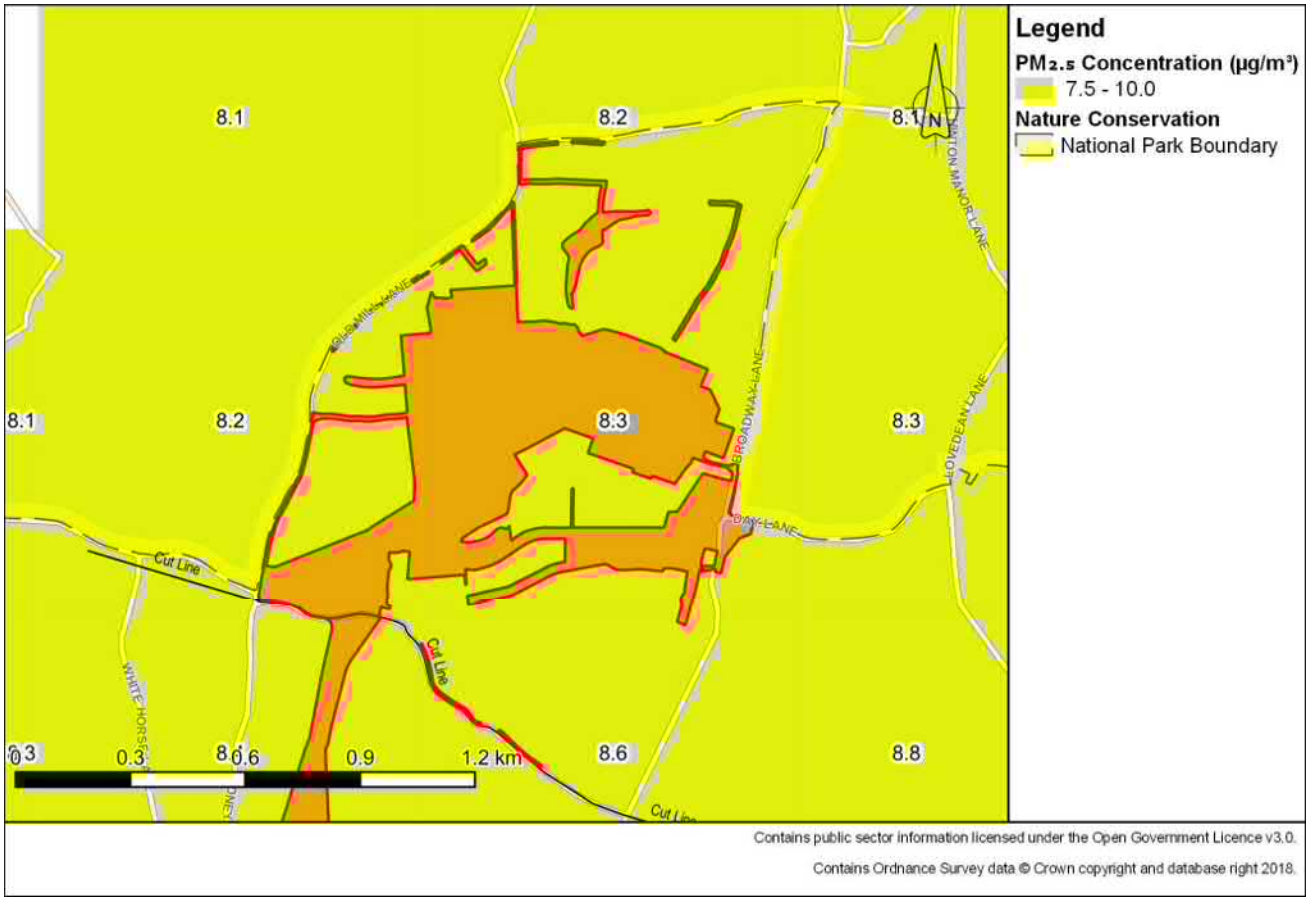

Plate 23.2 – Section 1 $PM_{2.5}$ Concentrations

23.5.1.6. Plate 23.2 shows that background concentrations of $PM_{2.5}$ are generally low, being below 50 % of the limit value. the average concentration of $PM_{2.5}$ over this section is 8.3 µg/m³.

23.5.1.7. The surrounding land at this Section is predominantly arable agricultural leading to the possibility of temporarily elevated concentrations of coarse particulate matter resulting from agricultural activity.

23.5.1.8. There are four areas designated as Ancient Woodland that are directly adjacent to the Order Limits for this Section. These are:

- Crabdens Copse (ID 1490538);
- Crabdens Row (ID 1490537);
- Crabdens Row (ID 1490461); and
- Stoneacre Copse (ID 1490442).

23.5.1.9. Whilst ancient woodland would not normally be included in a construction dust assessment, the proximity of these areas to an area of substantial works merits their inclusion.

23.5.1.10. Cumulative banded receptor counts for this section are shown in Table 23.10.

Table 23.10 - Cumulative Receptor Counts for Section 1

Receptor Type	0-20 m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	11	23	25	29	41	7
Community	0	0	0	0	0	0
Commercial	1	1	1	2	2	1
Total	12	24	26	31	43	8

23.5.1.11. Due to the presence of residential receptors in a largely rural area where a reasonable level of amenity can be assumed and the aesthetics of the area may be diminished by nuisance dust, using the criteria in Appendix 23.2 (IAQM Construction Assessment) the sensitivity of the area to both dust soiling and the health effects of PM_{10} is considered to be **high** for earthworks, construction and trackout activities.

Section 2 – Anmore

23.5.1.12. Modelled background concentrations of PM_{10} are shown in Plate 23.2.

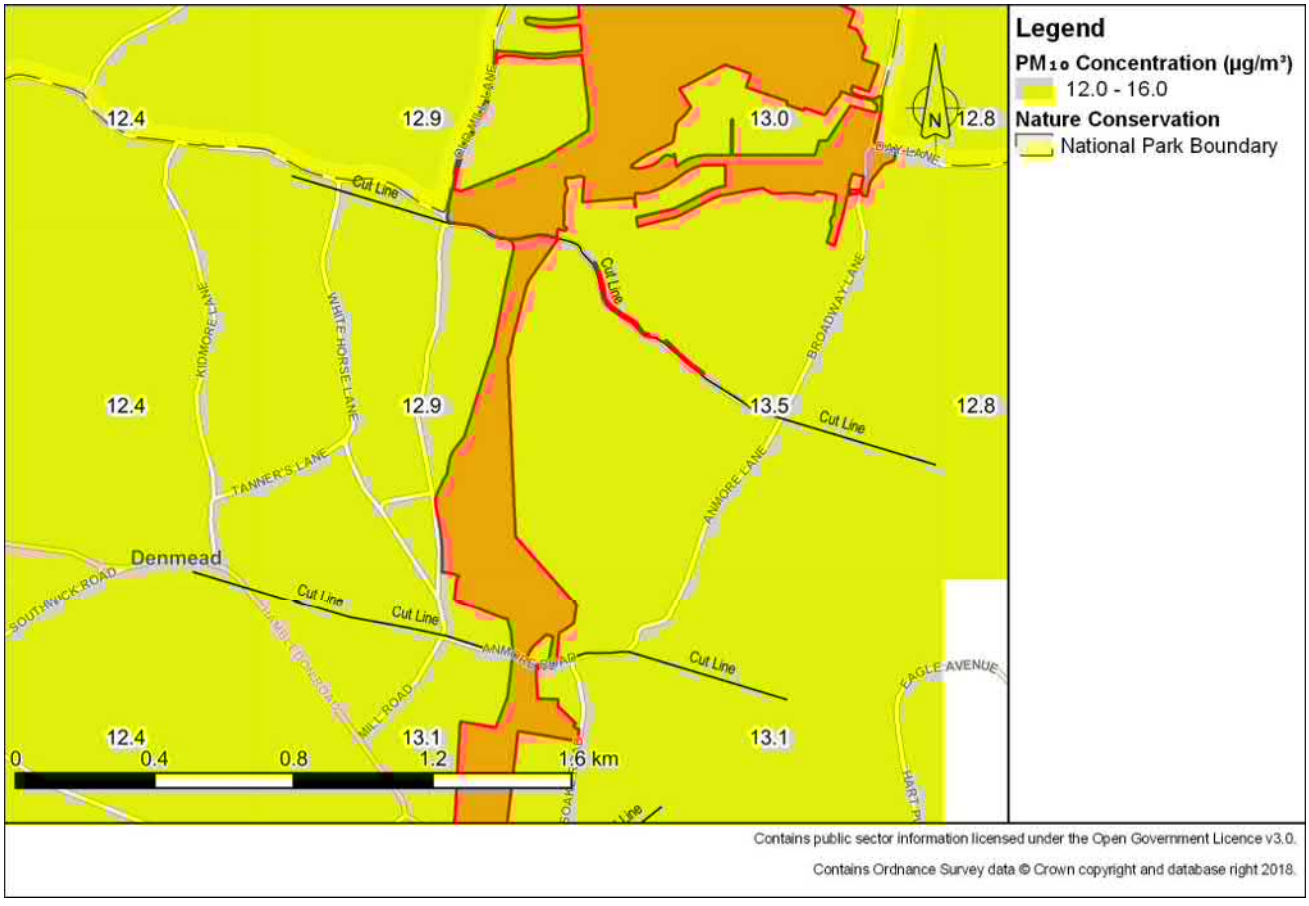

Plate 23.3 – Section 2 PM_{10} Concentrations

23.5.1.13. Plate 23.3 shows that background concentrations of PM_{10} in Section 2 are generally low, with an average concentration of 12.9 µg/m³.

23.5.1.14. Modelled background concentrations of $PM_{2.5}$ are shown in Plate 23.4.

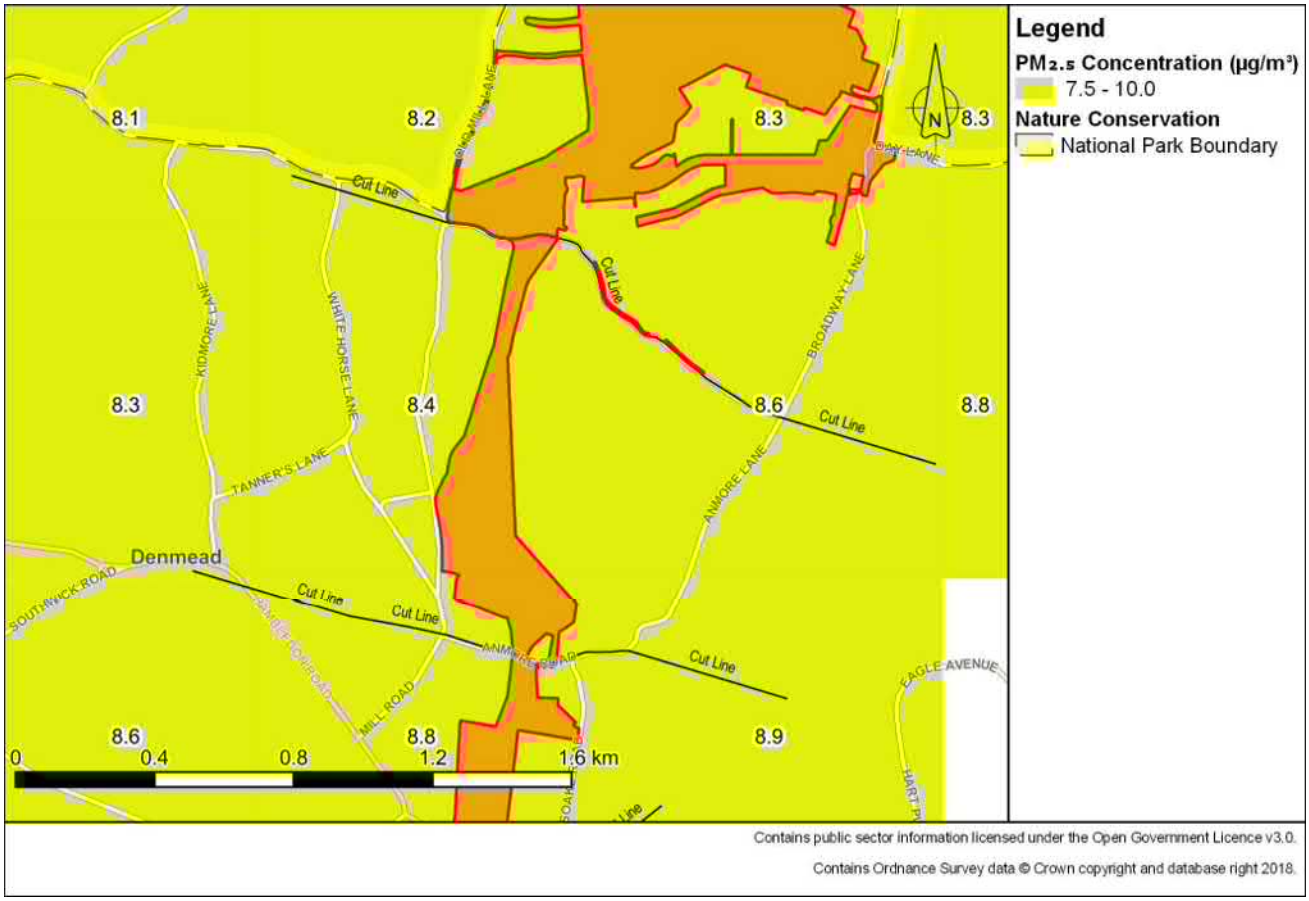

Plate 23.4 – Section 2 $PM_{2.5}$ Concentrations

23.5.1.15. Plate 23.4 shows generally low background concentrations of $PM_{2.5}$, with the average concentration for this section at 8.5 µg/m³.

23.5.1.16. The surrounding land is mainly arable agricultural, which may create seasonal peaks in coarse particulate matter, with the settlement of Denmead to the immediate south-west.

23.5.1.17. Cumulative banded receptor counts for this section are shown in Table 23.11.

Table 23.11 - Cumulative Receptor Counts for Section 2

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	9	19	41	114	289	0
Community	0	0	0	0	0	0
Commercial	1	1	1	1	2	0
Total	10	20	42	115	291	0

Section 3 – Denmead/Kings Pond Meadow

23.5.1.18. Modelled background concentrations of PM_{10} are shown in Plate 23.5.

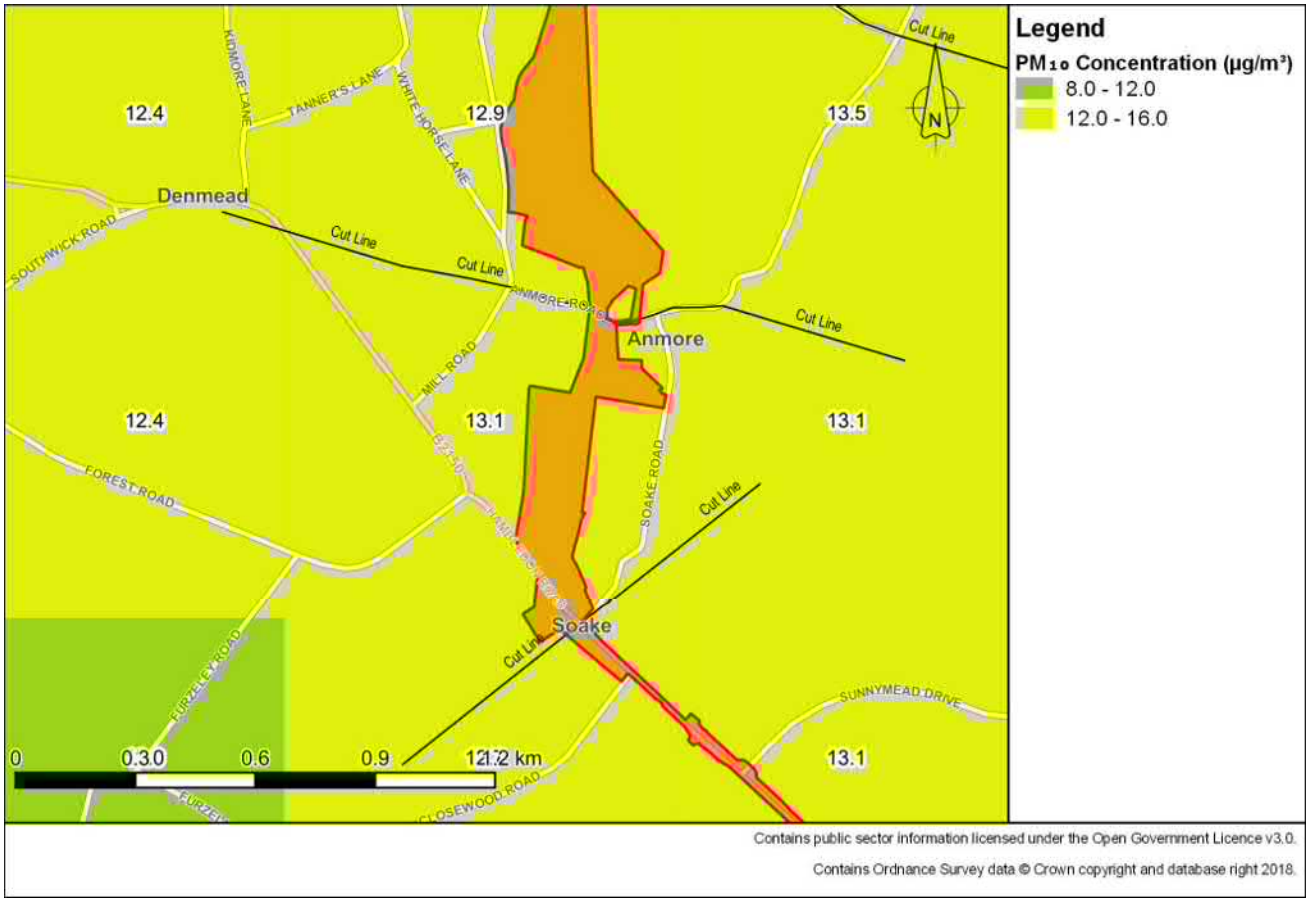

Plate 23.5 – Section 3 PM_{10} Concentrations

23.5.1.19. Plate 23.5 shows generally low concentrations of PM_{10} for this Section. The average concentration for this section is 12.8 µg/m³.

23.5.1.20. Modelled background concentrations of $PM_{2.5}$ are shown in Plate 23.6.

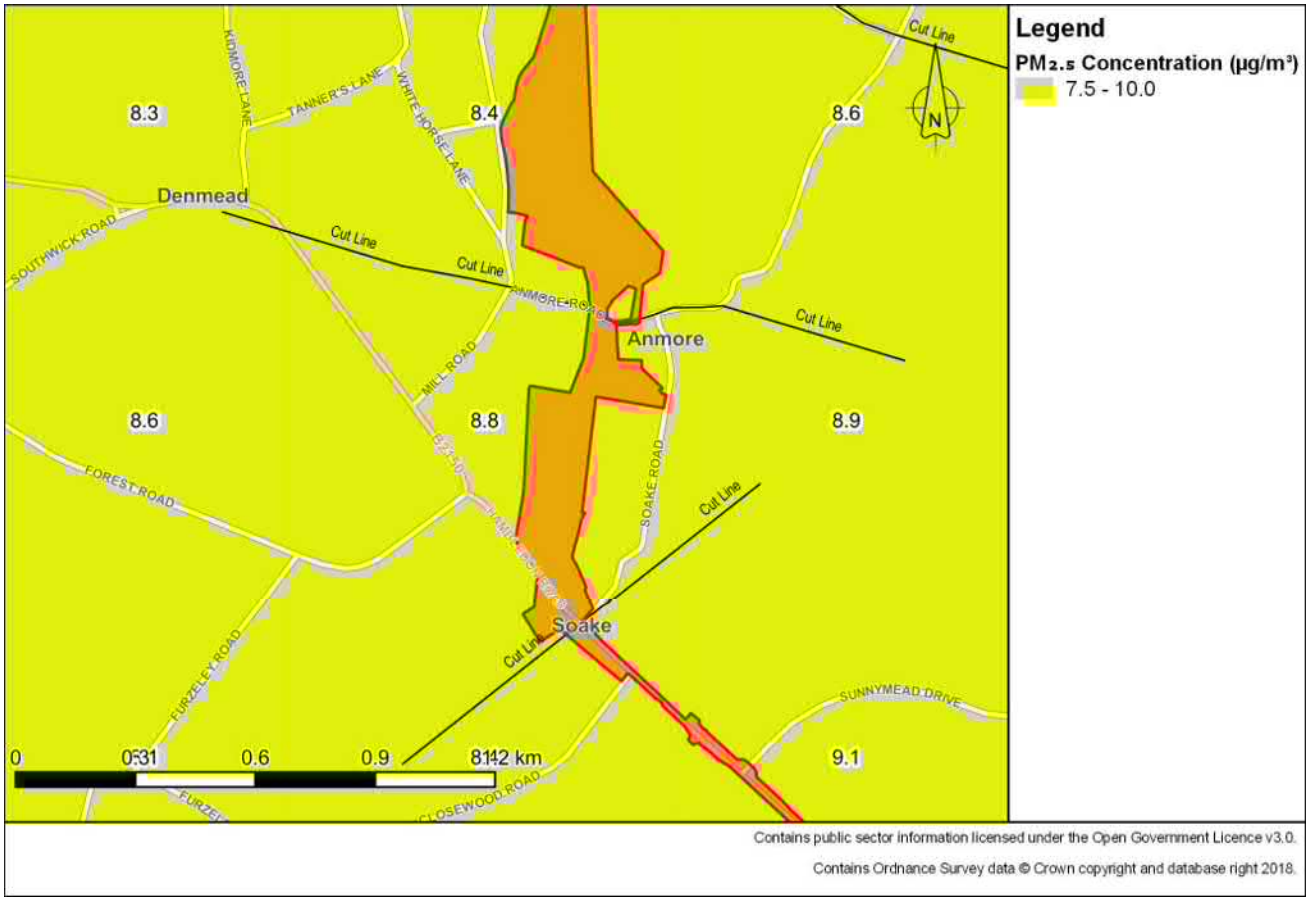

Plate 23.6 – Section 3 $PM_{2.5}$ Concentrations

23.5.1.21. Plate 23.6 shows that background concentrations of $PM_{2.5}$ are generally low for this Section, with the average concentration being 8.6 µg/m³.

23.5.1.22. The surrounding land is a mix of arable agricultural, woodland and the settlement of Denmead, with local B class roads passing through the Order Limits.

23.5.1.23. Cumulative banded receptor counts for this Section are shown in Table 23.12.

Table 23.12 - Cumulative Receptor Counts for Section 3

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	16	36	79	194	424	0
Community	0	0	0	0	1	0
Commercial	1	3	6	9	10	0
Total	17	39	85	203	435	0

23.5.1.24. The Denmead Dental Surgery is within 350 m of this Section.

Section 4 – Hambledon Road to Farlington Avenue

23.5.1.25. Modelled background concentrations of PM_{10} are shown in Plate 23.7.

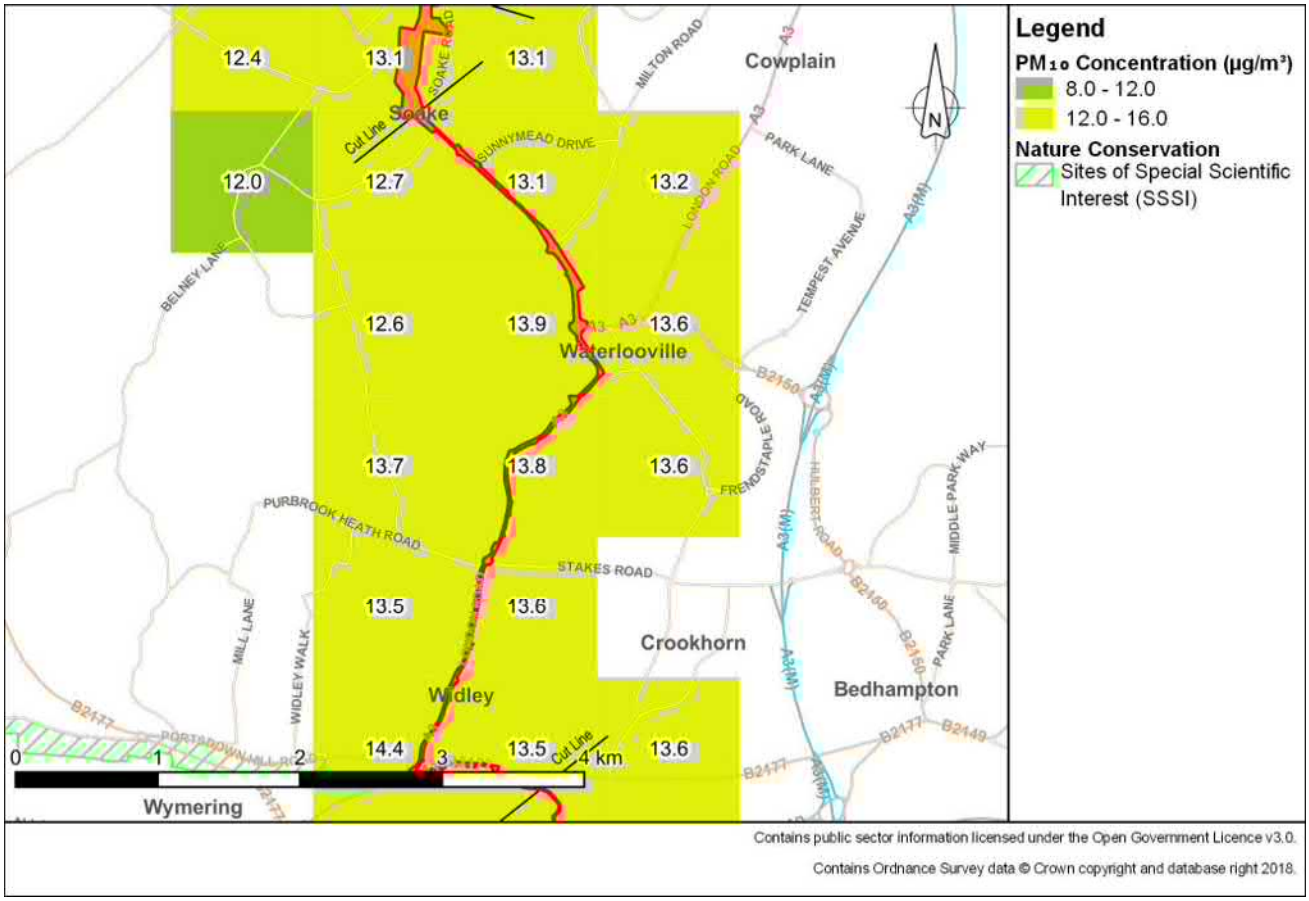

Plate 23.7 – Section 4 PM_{10} Concentrations

23.5.1.26. Plate 23.7 shows that concentration of PM_{10} increase from north to south across this Section. The average concentration of PM_{10} for this section is 13.7 µg/m³.

23.5.1.27. Modelled background concentrations of $PM_{2.5}$ are shown in Plate 23.8.

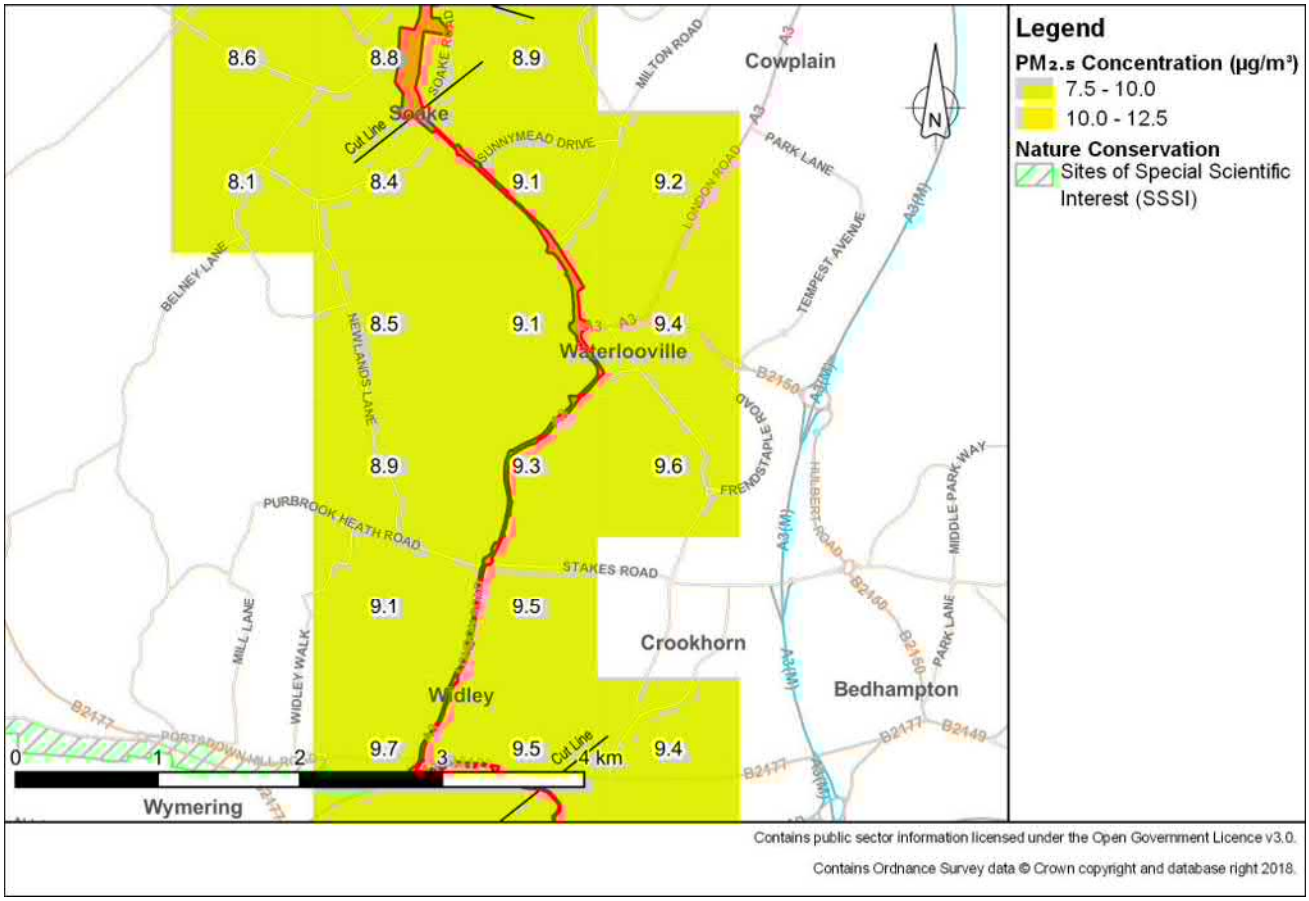

Plate 23.8 – Section 4 $PM_{2.5}$ Concentrations

23.5.1.28. Plate 23.8 shows that concentrations of $PM_{2.5}$ also increase from north to south across this Section. The average concentration of $PM_{2.5}$ is 9.6 µg/m³.

23.5.1.29. This Section passes through Waterlooville, and to the west of the Stakes, Purbrook and Widley urban areas. The land to the west of the route is a mix of grassland, woodland and arable agricultural, whilst the areas to the east of the route are dense suburban settlements.

23.5.1.30. Cumulative banded receptor counts for this Section are shown in Table 23.13.

Table 23.13 - Cumulative Receptor Counts for Section 4

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	595	979	1724	3,515	5,697	774
Community	6	8	13	19	27	5
Commercial	89	123	162	389	649	91
Total	690	1,110	1,899	3,923	6,373	870

23.5.1.31. Education facilities within 350 m of this Section are:

- Little Acorns Nursery School;
- Woodside House School;
- The Waterloo School;
- Mill Hill Early Years Centre;
- Mill hill Primary School;
- Purbrook Infant School; and
- Parklands Day Nursery.

23.5.1.32. Medical facilities within 350 m of this Section are:

- Forest End Surgery; and
- The Rowans Hospice.

Section 5 – Farlington

23.5.1.33. Modelled background concentration of PM_{10} are shown in Plate 23.9.

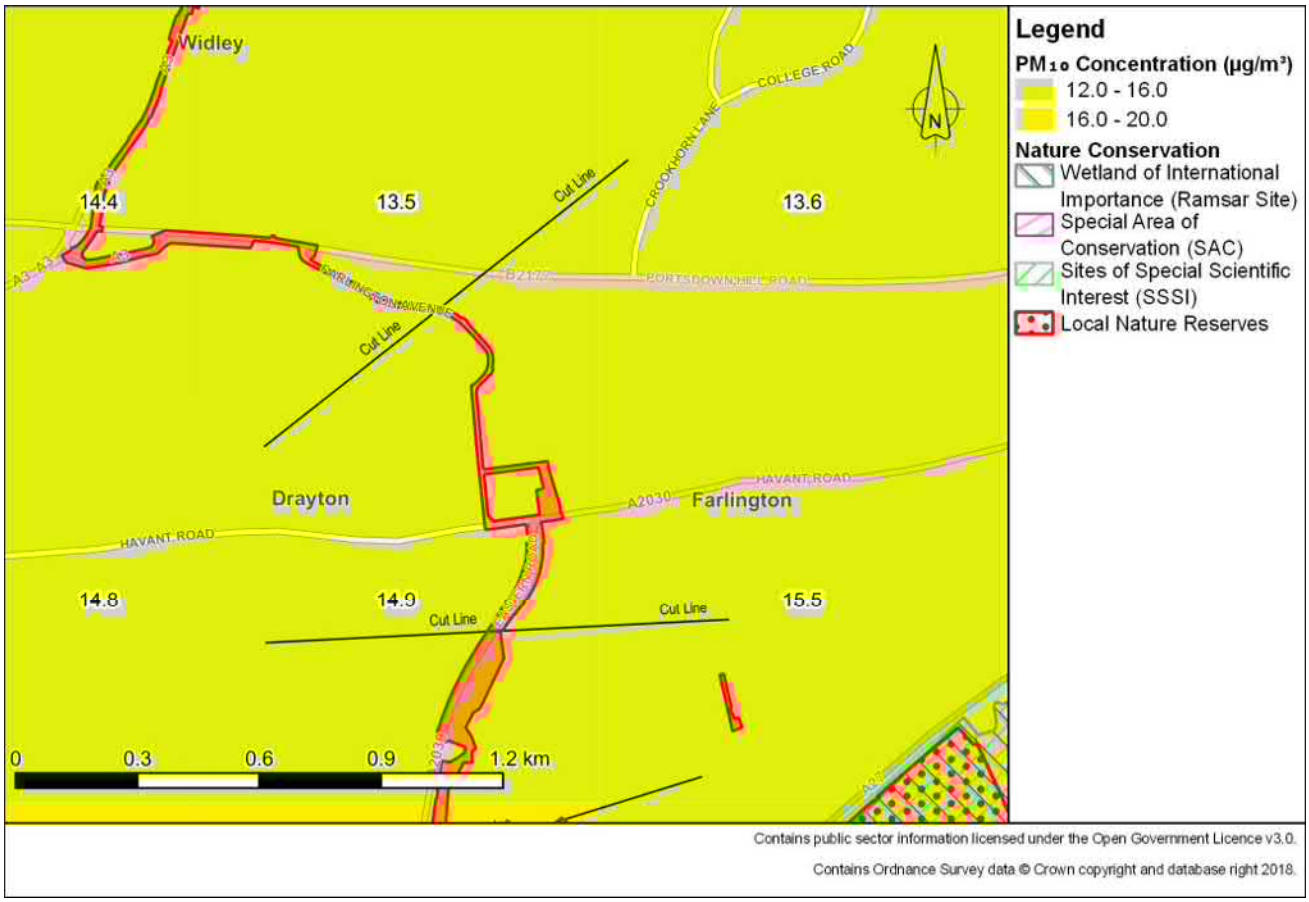

Plate 23.9 – Section 5 PM_{10} Concentrations

23.5.1.34. Plate 23.9 shows that concentrations of PM_{10} are still below 50 % of the limit value in this Section. The average PM_{10} concentration for this Section is 14.8 µg/m³.

23.5.1.35. Modelled background concentrations of $PM_{2.5}$ are shown in Plate 23.10.

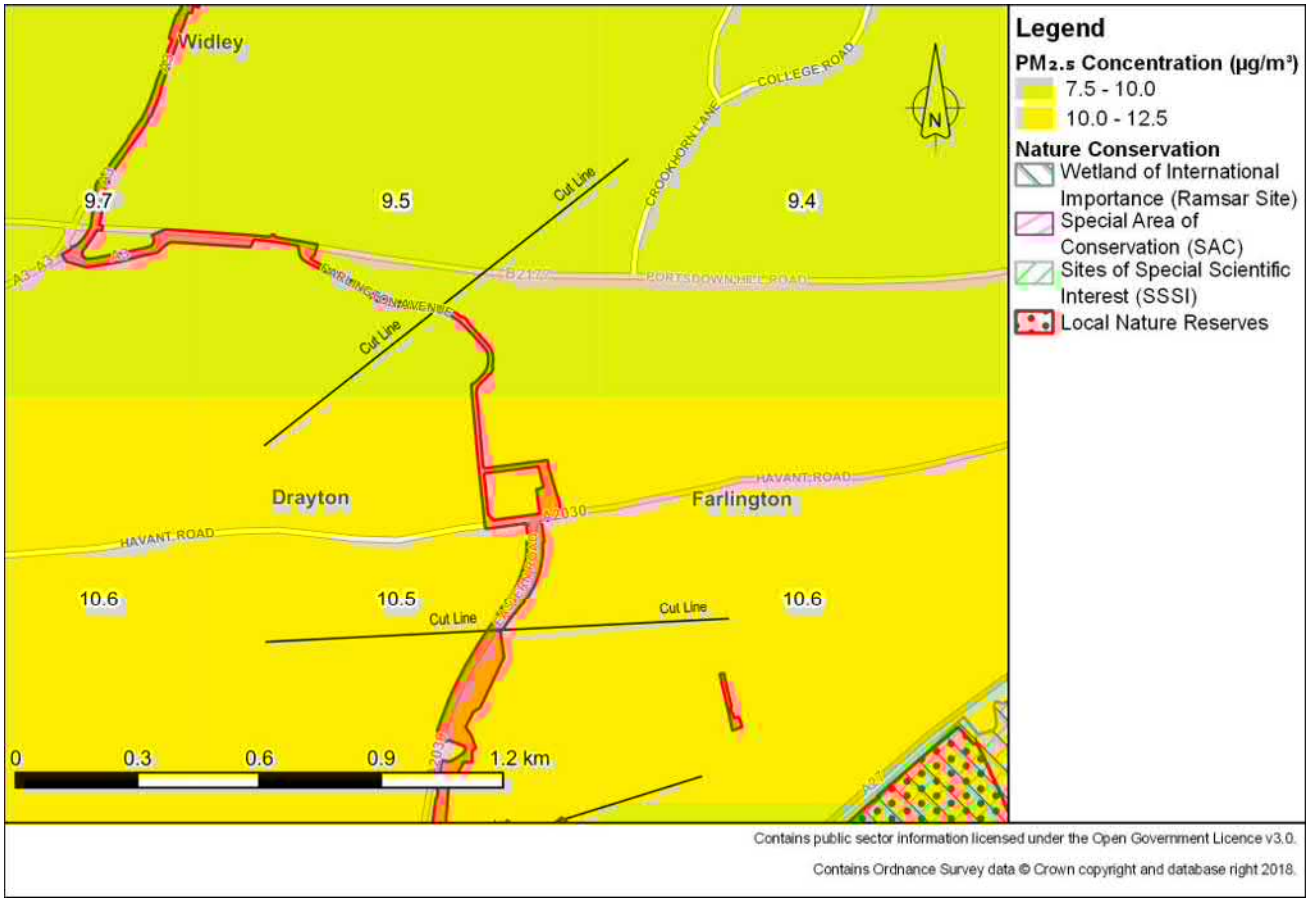

Plate 23.10 – Section 5 $PM_{2.5}$ Concentrations

23.5.1.36. Plate 23.10 shows that concentrations of $PM_{2.5}$ in this Section are approaching 50 % of the limit value, leaving little headroom for polluting activities. The average concentration of $PM_{2.5}$ for this Section is 10.2 µg/m³.

23.5.1.37. The areas of Drayton and Farlington that this Section passes through are densely populated suburban areas close to the A27.

23.5.1.38. Cumulative banded receptor counts for this Section are shown in Table 23.14.

Table 23.14 - Cumulative Receptor Counts for Section 5

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	171	285	499	872	1,374	195
Community	3	3	4	4	6	0
Commercial	3	3	3	8	60	10
Total	177	291	506	884	1,440	205

23.5.1.39. Education facilities within 350 m of this Section are:

- Solent Infant School; and
- Solent Junior School.

23.5.1.40. The ANA Treatment Centres Ltd medical institution is within 350 m of this Section.

Section 6 – Zetland Field and Sainsbury's Car Park

23.5.1.41. Modelled background concentrations of PM_{10} are shown in Plate 23.11.

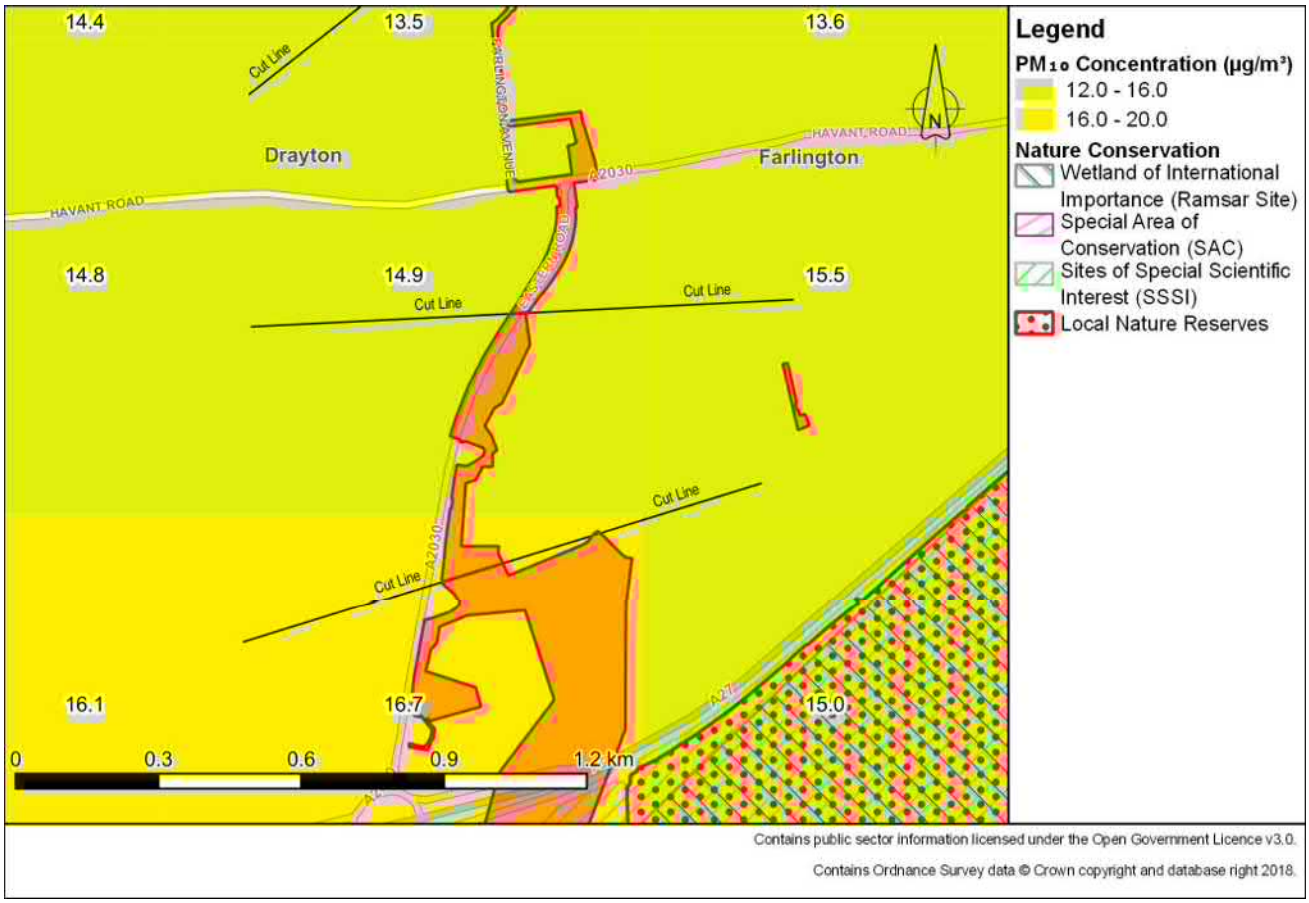

Plate 23.11 – Section 6 PM_{10} Concentration

23.5.1.42. Plate 23.11 shows that concentrations of PM_{10} are low, with an average concentration for the area of 15.2 µg/m³.

23.5.1.43. Modelled concentrations of $PM_{2.5}$ are shown in Plate 23.12.

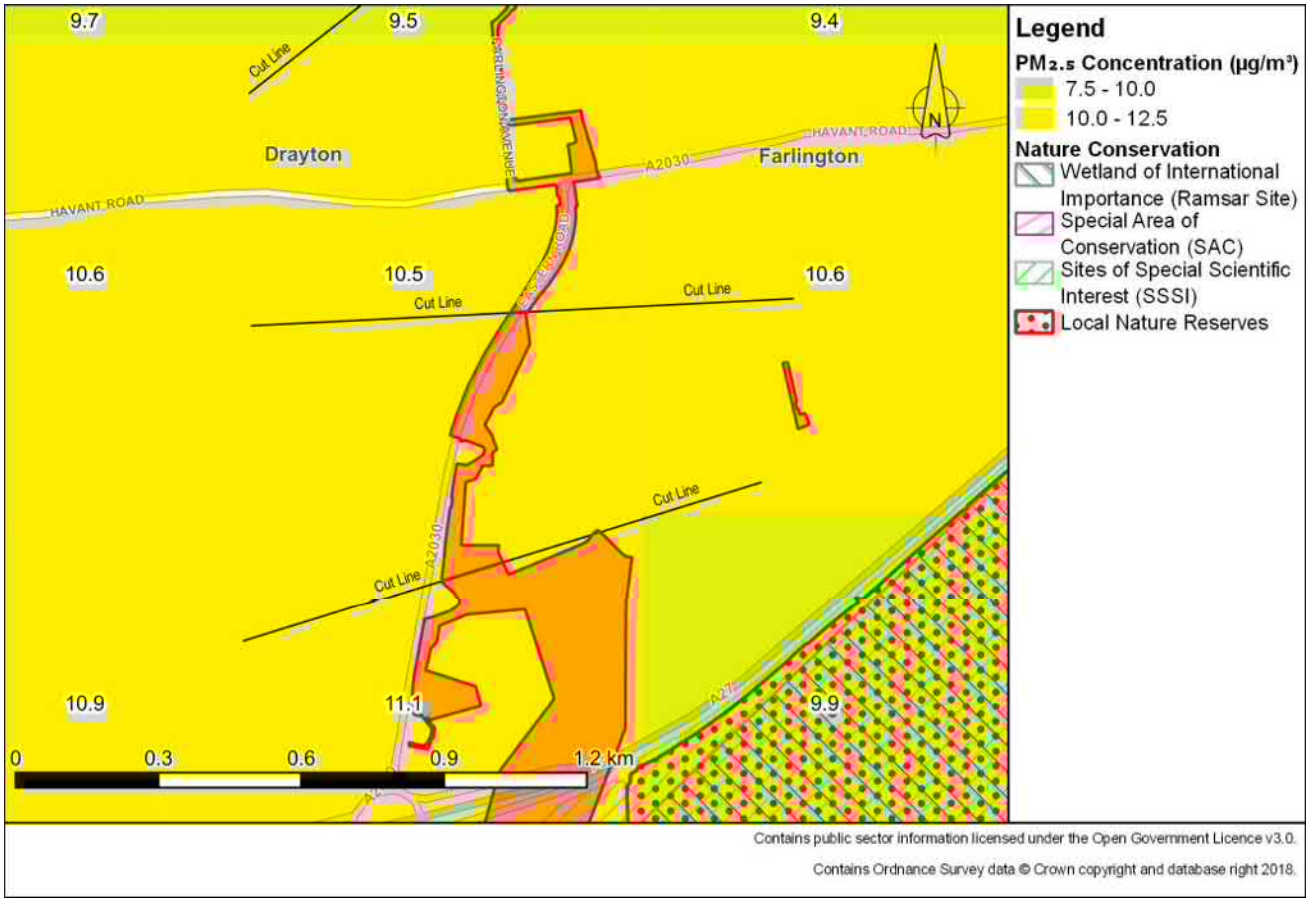

Plate 23.12 – Section 6 $PM_{2.5}$ Concentrations

23.5.1.44. Plate 23.12 shows that concentrations of $PM_{2.5}$ are generally low, though close to 50% of the limit value, leaving little headroom for particulate producing activities. Average concentrations of $PM_{2.5}$ for this section are 10.4 µg/m³.

23.5.1.45. The surrounding area is made up of densely populated suburbia and commercial areas, including a large supermarket.

23.5.1.46. Cumulative banded receptor for this Section are shown in Table 23.14.

Table 23-15 - Cumulative Receptor Counts for Section 6

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	39	121	313	642	1,217	0
Community	0	0	0	2	2	0
Commercial	12	22	59	129	178	0
Total	51	143	372	773	1,397	0

23.5.1.47. The ANA Treatment Centres Ltd medical institution is within 350 m of this Section.

Section 7 – Farlington Junction to Airport Service Road

23.5.1.48. Modelled PM_{10} concentrations for this Section are shown in Plate 23.13.

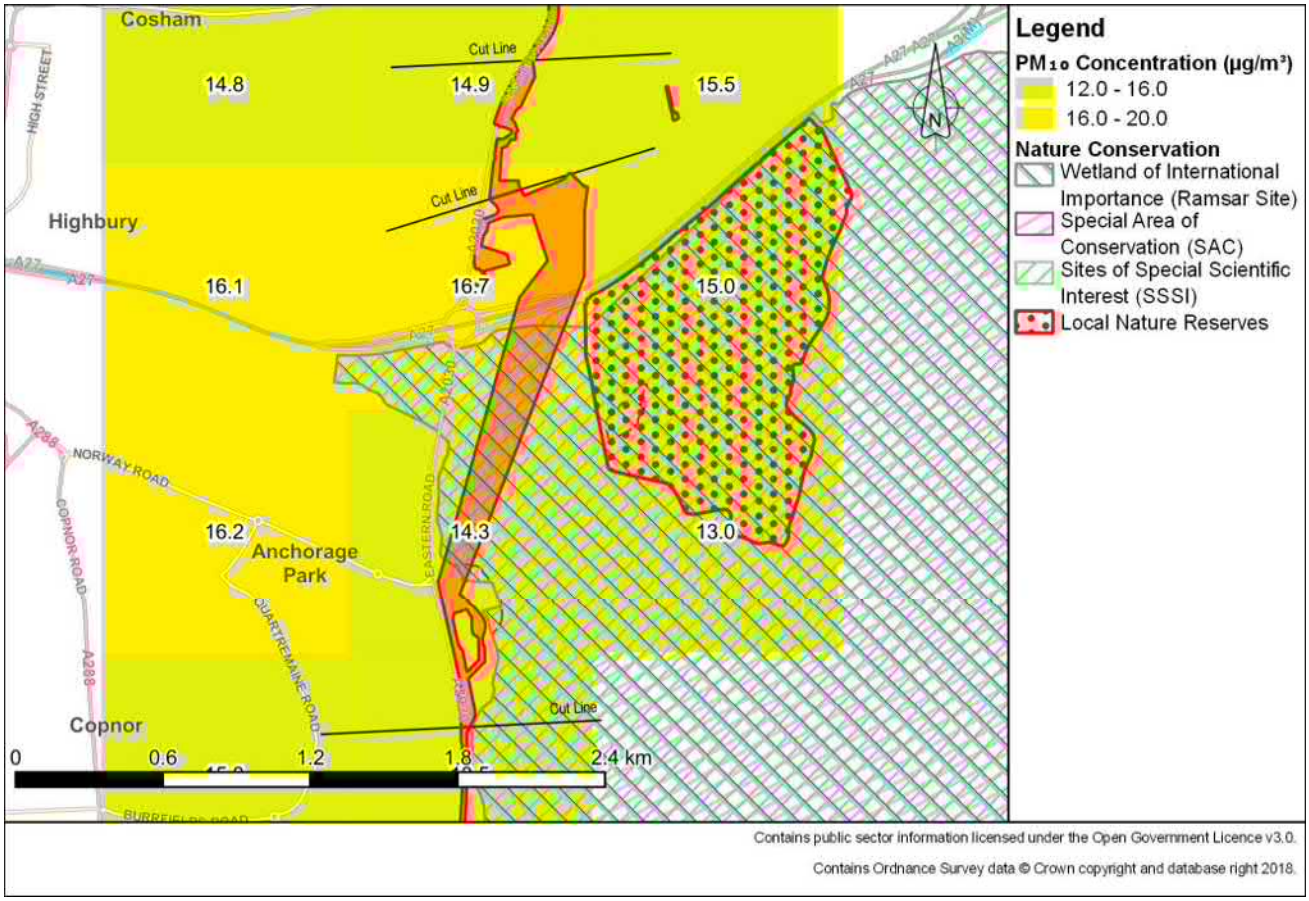

Plate 23.13 – Section 7 PM_{10} Concentrations

23.5.1.49. Plate 23.13 shows low background concentrations of PM_{10}, with the average concentration for the Section being 15.0 µg/m³.

23.5.1.50. Modelled $PM_{2.5}$ concentrations for this Section are shown in Plate 23.14.

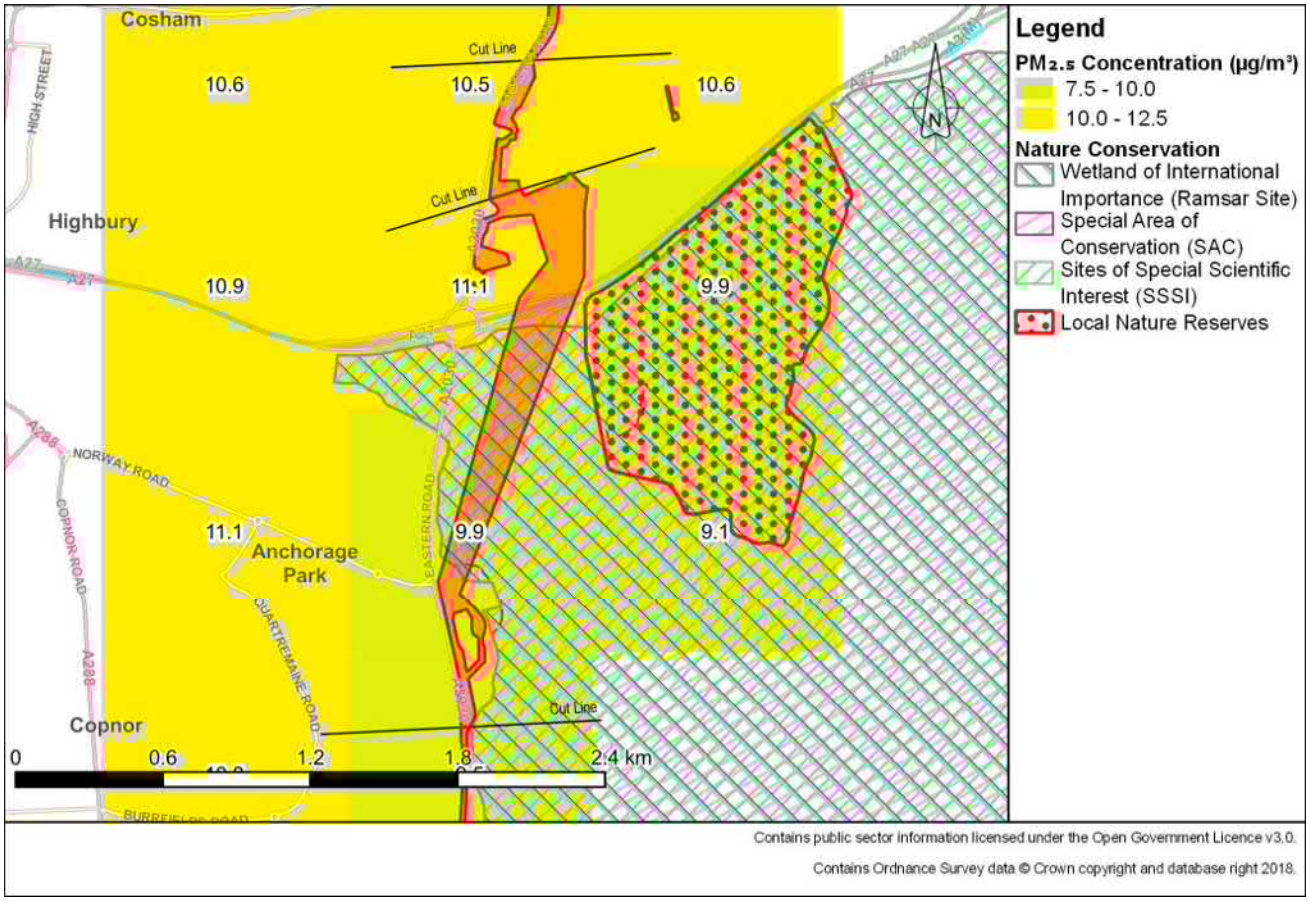

Plate 23.14 – Section 7 $PM_{2.5}$ Concentrations

23.5.1.51. Plate 23.14 shows generally low concentrations of $PM_{2.5}$ for this Section, with an average concentration 10.4 µg/m³.

23.5.1.52. The area around this Section includes the A27 and its junction with the A2030 Eastern Road that leads to Drayton and Farlington north of the junction and down the eastern site of the City of Portsmouth south of the junction.

23.5.1.53. This Section passes through the Chichester and Langstone Harbours Wetland of International Importance (Ramsar) (ID UK11013) and Special Protection Area (SPA) (ID UK9011011), Langstone Harbour Site of Special Scientific Interest (SSSI) (ID 7752), and Solent Maritime SAC (ID UK0030059), and adjacent to the Farlington Marshes LNR. All of these areas may be sensitive to the effects of particulate matter from construction activities.

23.5.1.54. Cumulative banded receptor counts for this section are shown in Table 23.16.

Table 23.16 - Cumulative Receptor Counts for Section 7

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	0	0	0	28	401	14
Community	0	0	0	0	3	0
Commercial	10	16	45	100	154	9
Total	10	16	45	128	558	23

Section 8 – Eastern Road (adjacent to Great Salterns Golf Course) to Moorings Way

23.5.1.55. Modelled PM_{10} concentrations for this section are shown in Plate 23.15 and $PM_{2.5}$ concentrations in Plate 23.16.

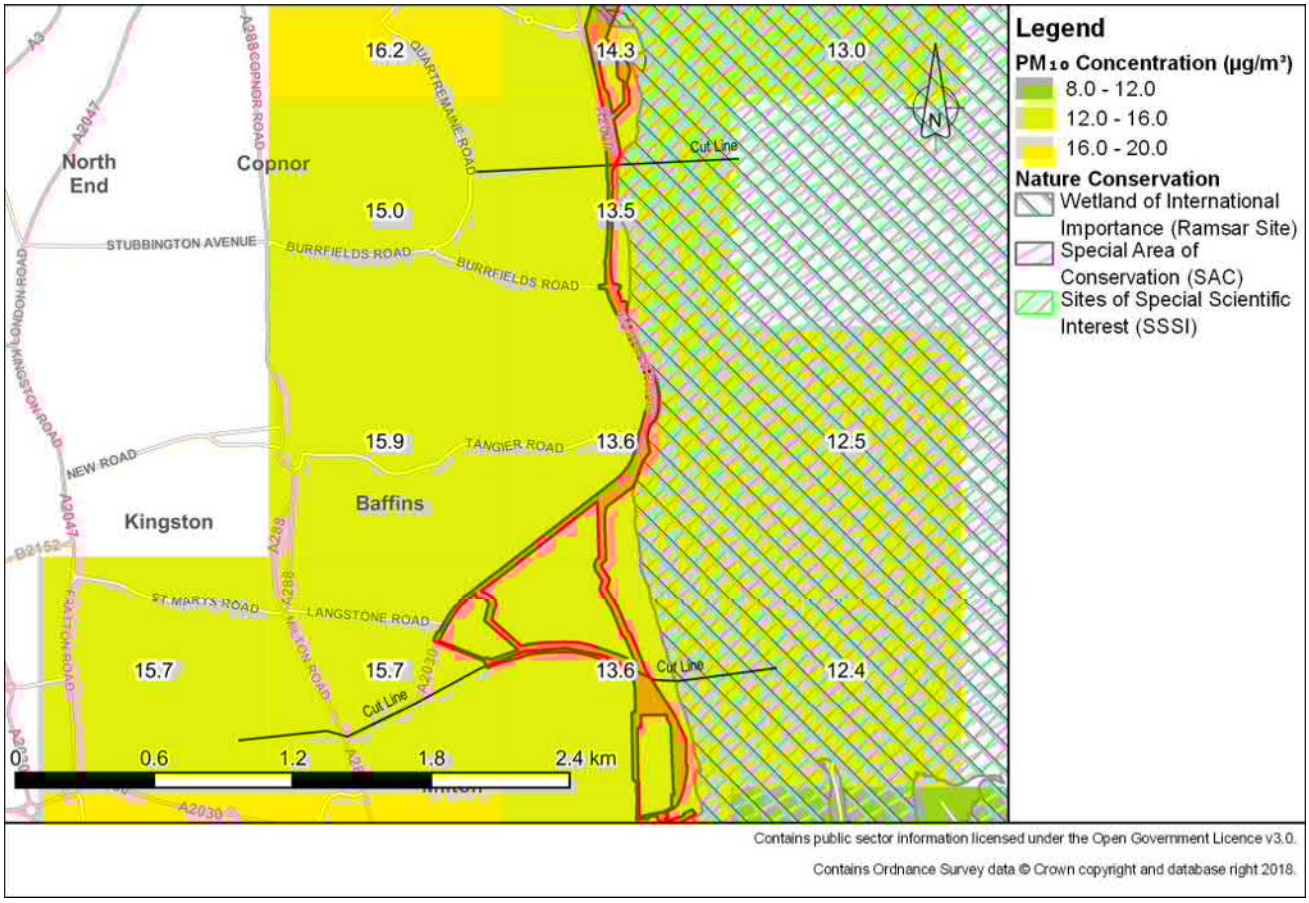

Plate 23.15 – Section 8 PM_{10} Concentrations

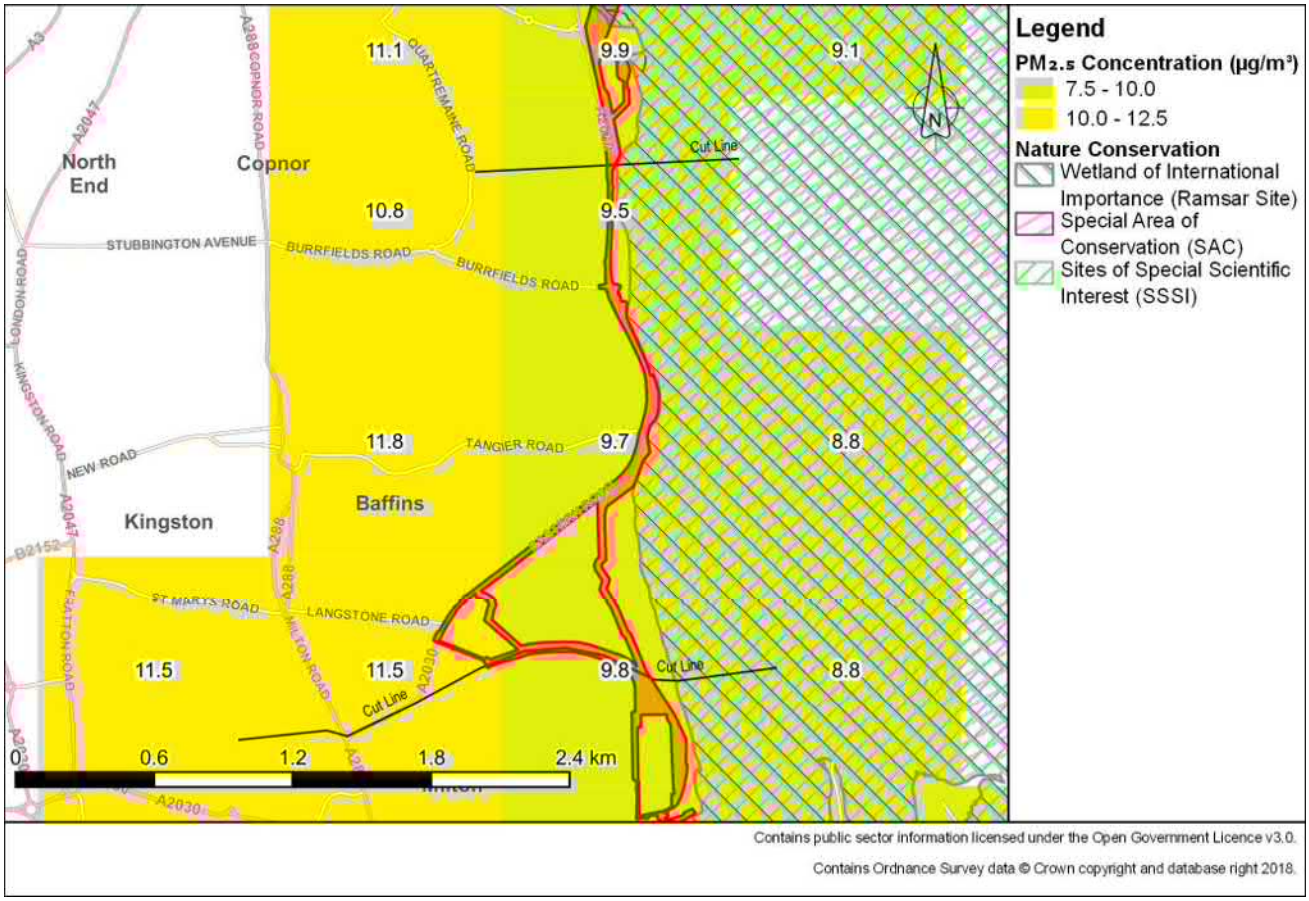

Plate 23.16 – Section 8 $PM_{2.5}$ Concentrations

23.5.1.56. Plate 23.15 and Plate 23.16 shows that background particulate concentrations are low in the area covered by this Section, with average concentrations being 14.3 µg/m³ for PM_{10} and 10.2 µg/m³ for $PM_{2.5}$. This Section runs directly adjacent to the Chichester and Langstone Harbours RAMSAR and SPA, Langstone Harbour SSSI and Solent Marine SAC, all of which may be sensitive to particulate deposition.

23.5.1.57. Cumulative banded receptor counts for this Section are shown in Table 23.17.

Table 23.17 - Cumulative Receptor Counts for Section 8

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	284	532	965	1,703	2,806	448
Community	1	2	3	3	11	0
Commercial	7	16	25	47	64	15
Total	292	550	993	1,753	2,881	463

23.5.1.58. Education facilities within 350 m of this Section are:

- Moorings Way Infant School; and
- Portsmouth College.

23.5.1.59. Medical facilities within 350 m of this Section are:

- St. James Hospital; and
- The Limes Mental Health Rehabilitation Unit.

Section 9 –Moorings Way to Bransbury Road

23.5.1.60. Modelled PM_{10} concentrations for this Section are shown in Plate 23.17 and $PM_{2.5}$ concentrations Plate 23.18.

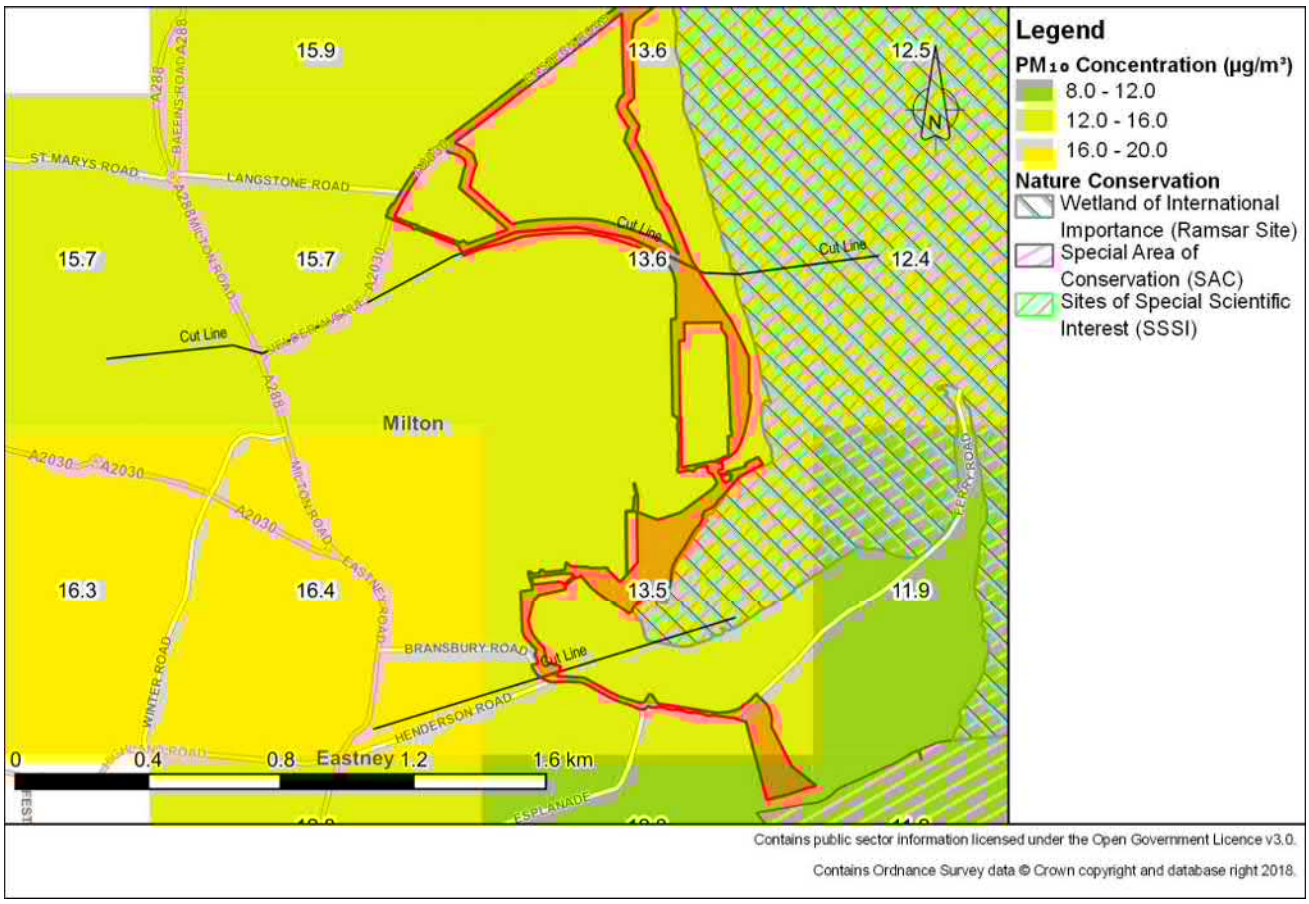

Plate 23.17 – Section 9 PM_{10} Concentrations

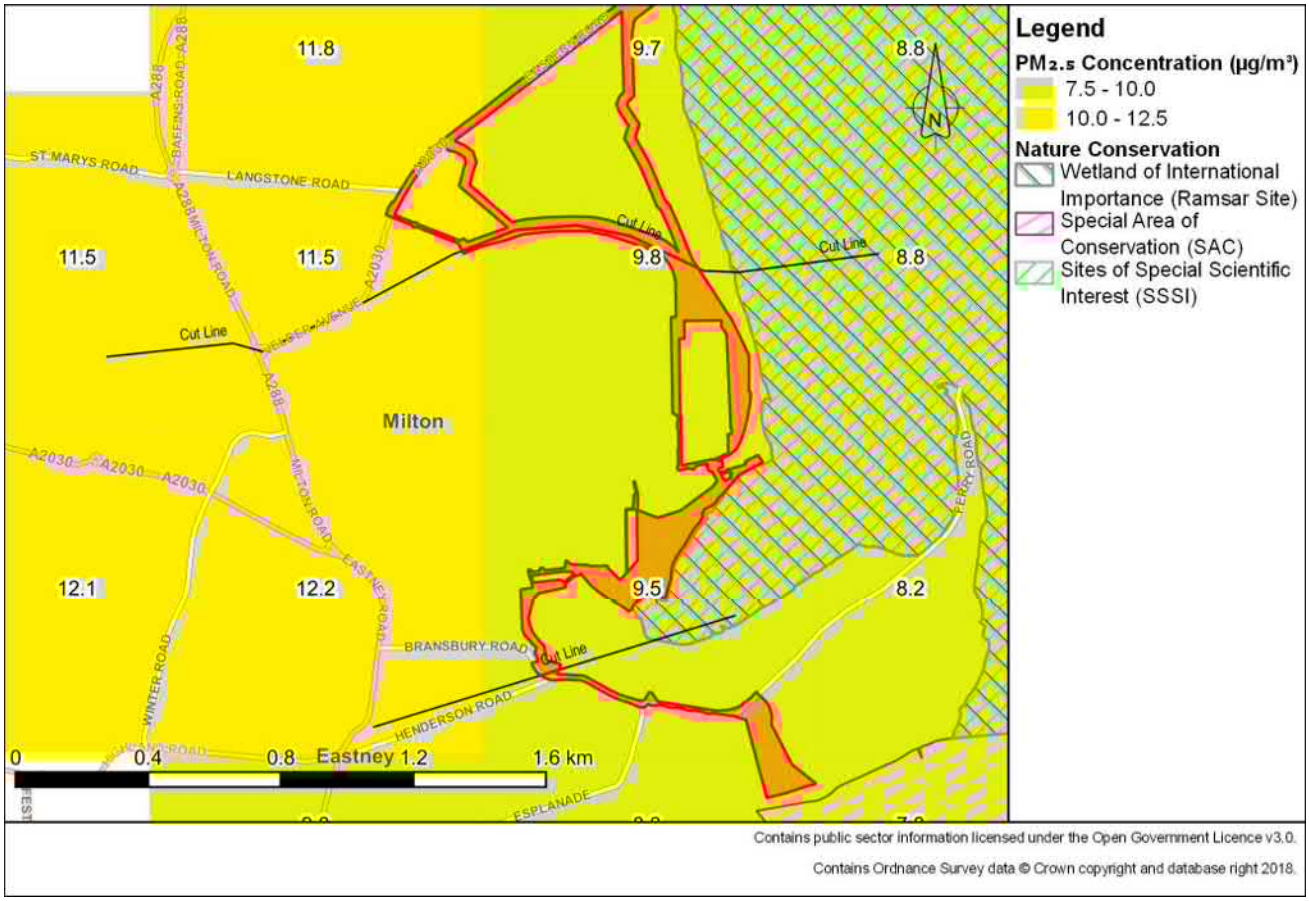

Plate 23.18 – Section 9 $PM_{2.5}$ Concentrations

23.5.1.61. Plate 23.17 shows that concentrations of are slightly elevated compared to earlier Sections, but are still considered low being below 50 % of the limit and objective value. The average PM_{10} concentration for this Section is 14.0 µg/m³.

23.5.1.62. Plate 23.18 shows that some areas covered by this Section are above 50 % of the limit value for $PM_{2.5}$ leaving less capacity for particulate generating activities. The average concentration for this Section is 10.1 µg/m³.

23.5.1.63. Cumulative banded receptor counts for this Section are shown in Table 23.18.

Table 23.18 - Cumulative Receptor Counts for Section 9

Receptor Type	0-20m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	364	706	1,253	2,100	3,813	0
Community	2	3	3	6	19	0
Commercial	10	12	17	37	65	0
Total	376	721	1,273	2,143	3,897	0

23.5.1.64. Education facilities within 350 m of this Section are:

- Private Nurseries;
- The University of Portsmouth Langstone Campus;
- Portsmouth Day Services;
- Moorings Way Infant School; and
- The Harbour School.

23.5.1.65. Medical facilities within 350 m of this Section are:

- St. James House Medical Centre;
- St. James Hospital; and
- The Limes Mental Health Rehabilitation Unit.

Section 10 – Eastney (Landfall)

23.5.1.66. Modelled background concentrations of PM_{10} for this Section are shown in Plate 23.19 and background concentration of $PM_{2.5}$ in Plate 23.20.

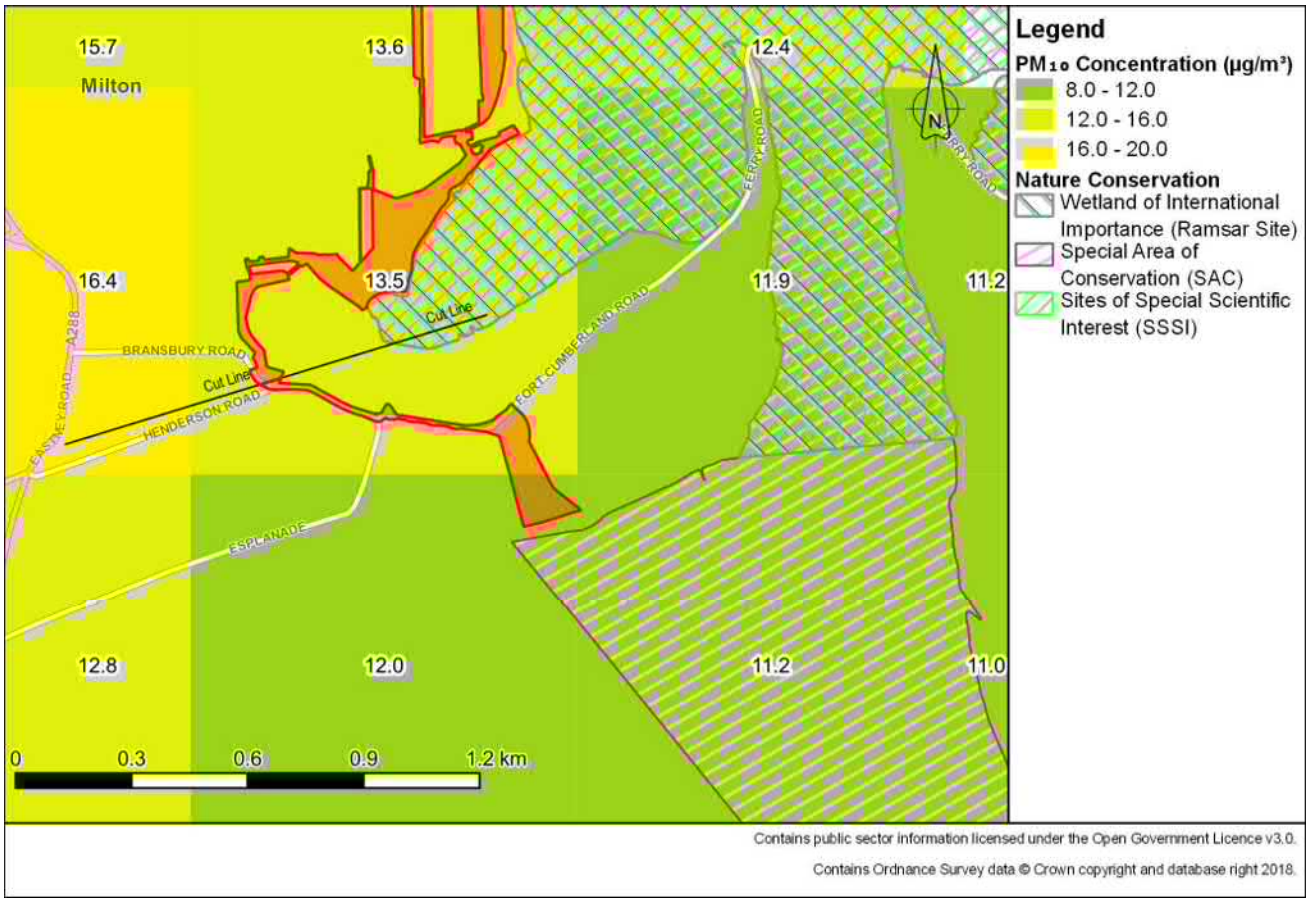

Plate 23.19 – Section 10 PM_{10} Concentrations

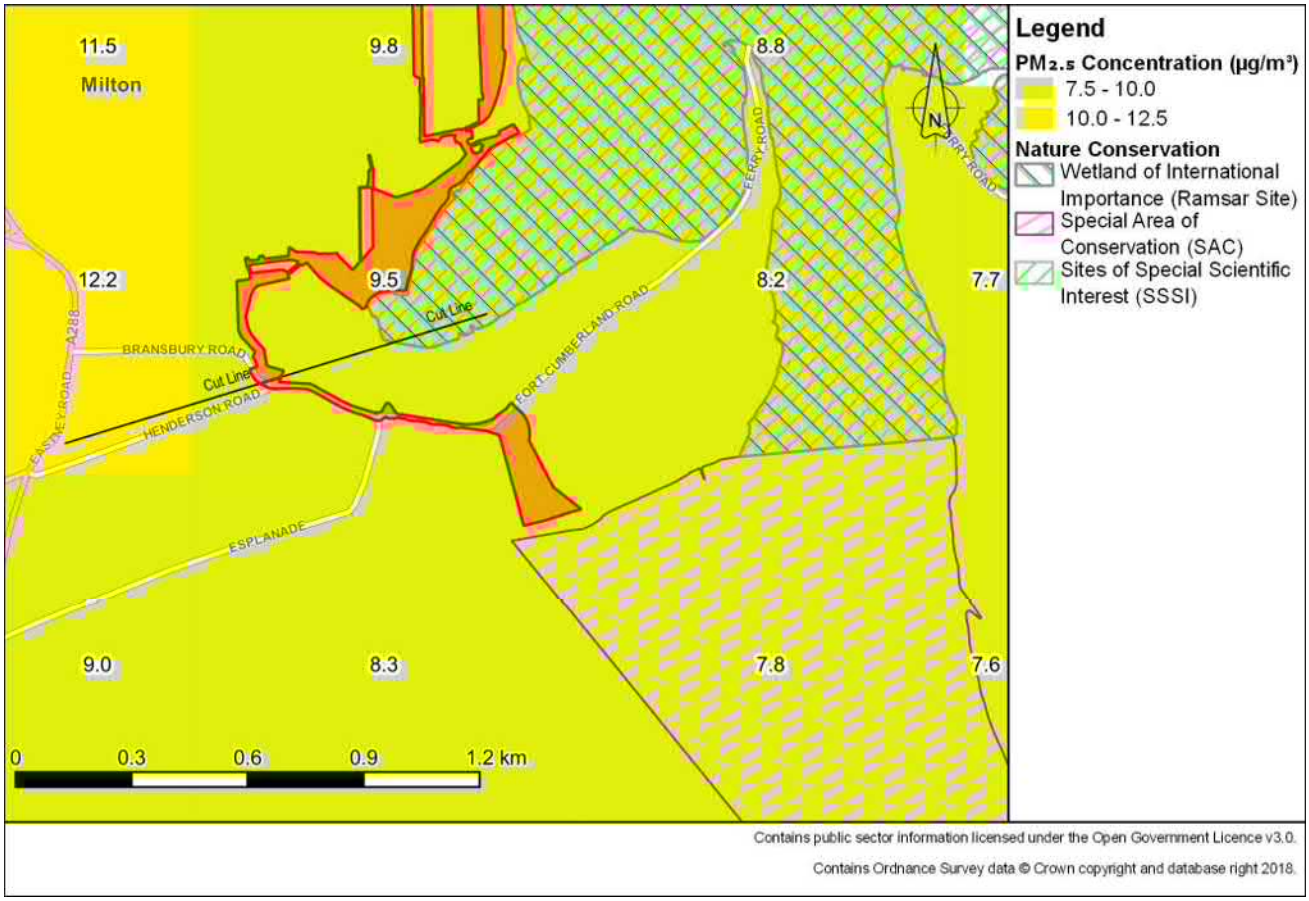

Plate 23.20 – Section 10 $PM_{2.5}$ Concentrations

23.5.1.67. Plate 23.19 and Plate 23.20 show that concentrations of particulates are generally low in this Section, with notable reductions in concentrations due to the presence of the coastline. The average concentration for PM_{10} in this section is 15.0 µg/m³ and for $PM_{2.5}$ it is 9.2 µg/m³. This area includes residential and leisure areas, along with the sand beach coastline.

23.5.1.68. Cumulative banded receptor counts for this Section are shown in Table 23.19.

Table 23.19 - Cumulative Receptor Counts for Section 10

Receptor Type	0-20 m	0-50 m	0-100 m	0-200 m	0-350 m	Trackout
Residential	155	270	484	864	1,383	384
Community	1	2	2	4	6	8
Commercial	40	57	68	124	127	47
Total	196	329	554	992	1,516	439

23.5.1.69. Education facilities within 350 m of Section 10 are:

- Private Nurseries; and
- Portsmouth Day Services.

NO_x and NO_2

23.5.1.70. Information regarding baseline NO_x and NO_2 is presented across the whole of the modelled traffic study area for air quality in the following Plates:

23.5.1.71. The 2018 baseline modelled background for NO_2 is presented in Plate 23.21.

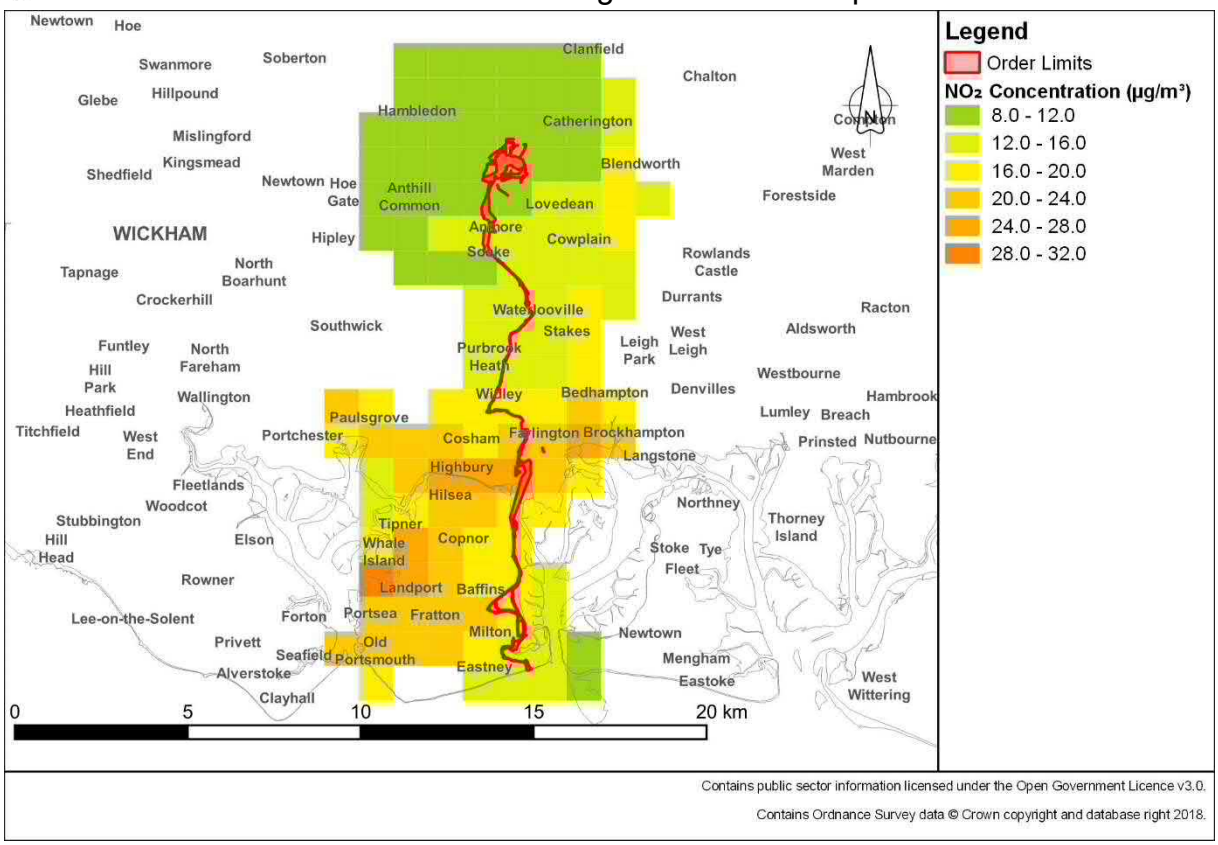

Plate 23.21 - 2018 Modelled NO_2 Background

23.5.1.72. The 2018 baseline modelled background for NOx is presented in Plate 23.22.

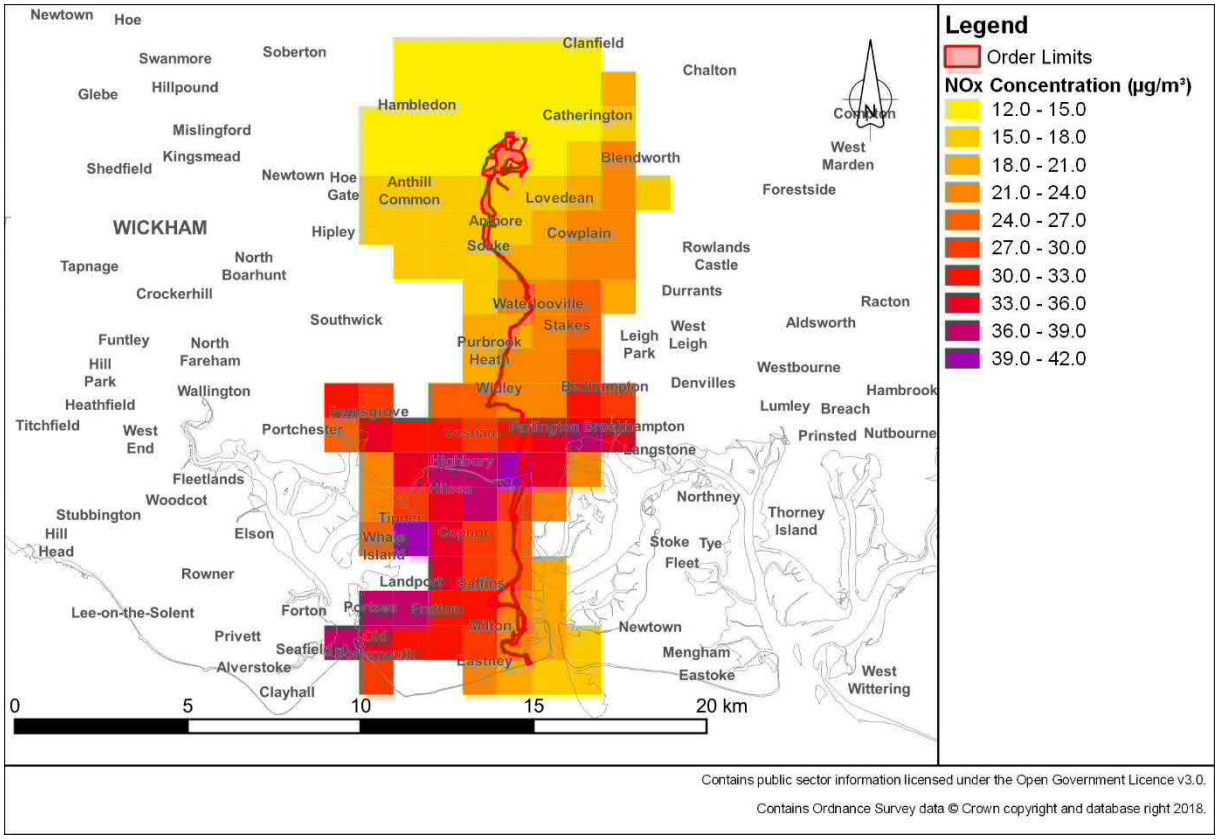

Plate 23.22 - 2018 Modelled NO_x Background

23.5.2. FUTURE BASELINE

23.5.2.1. The Future Baseline scenario is relevant to the assessments of non-construction related diverted traffic and construction traffic, and is referred to as the Do-Minimum scenario in line with the traffic flow data.

23.5.2.2. The 2026 modelled background for NO_2 is presented in Plate 23.23.

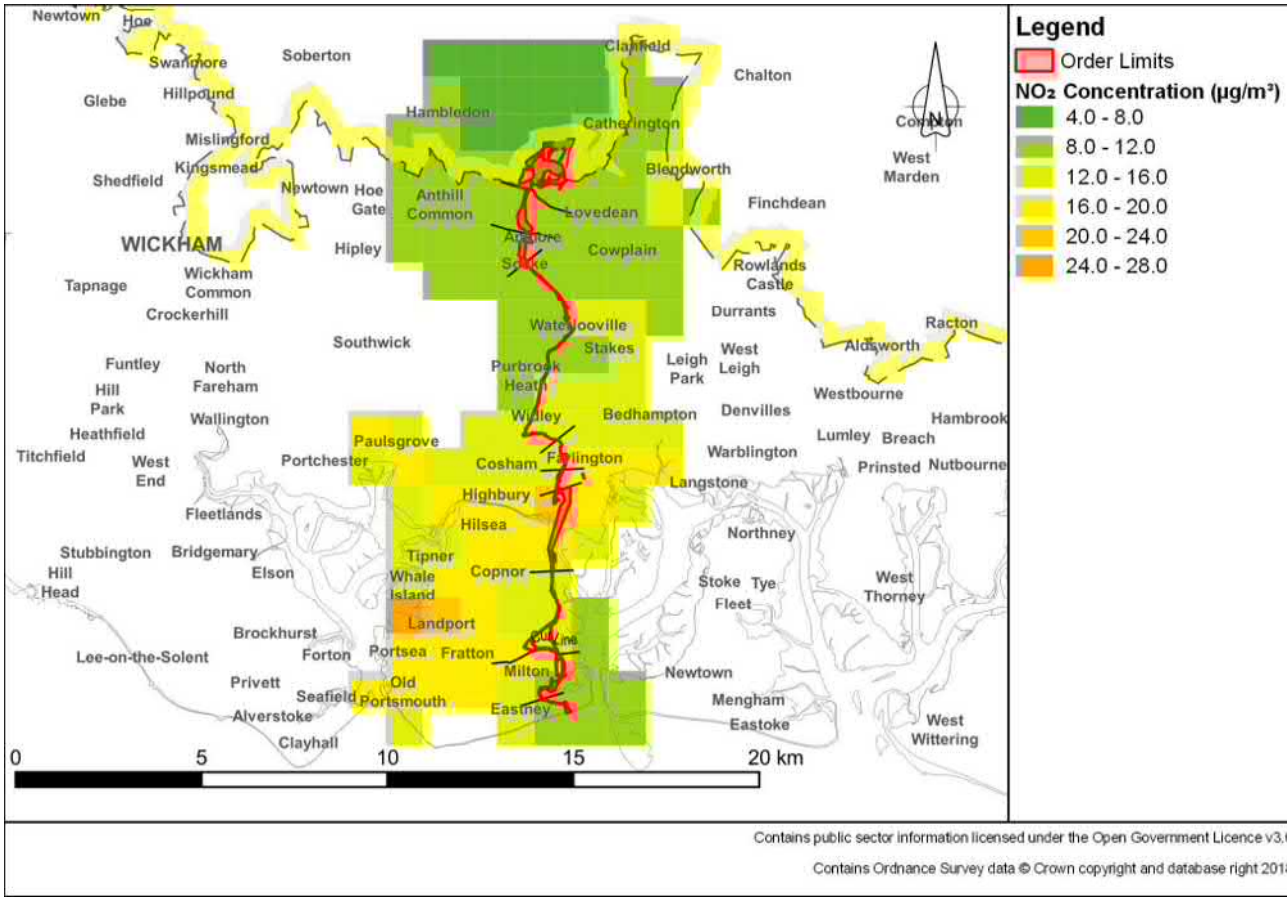

Plate 23.23 - 2026 Modelled NO_2 Background

23.5.2.3. Plate 23.23 shows that future modelled NO_2 background concentrations are predicted to be low in the Hordean and Lovedean areas of the Proposed Development, and elevated in the City of Portsmouth area and around key junctions of the A27.

23.5.2.4. The 2026 modelled background for NO_x is presented in Plate 23.24.

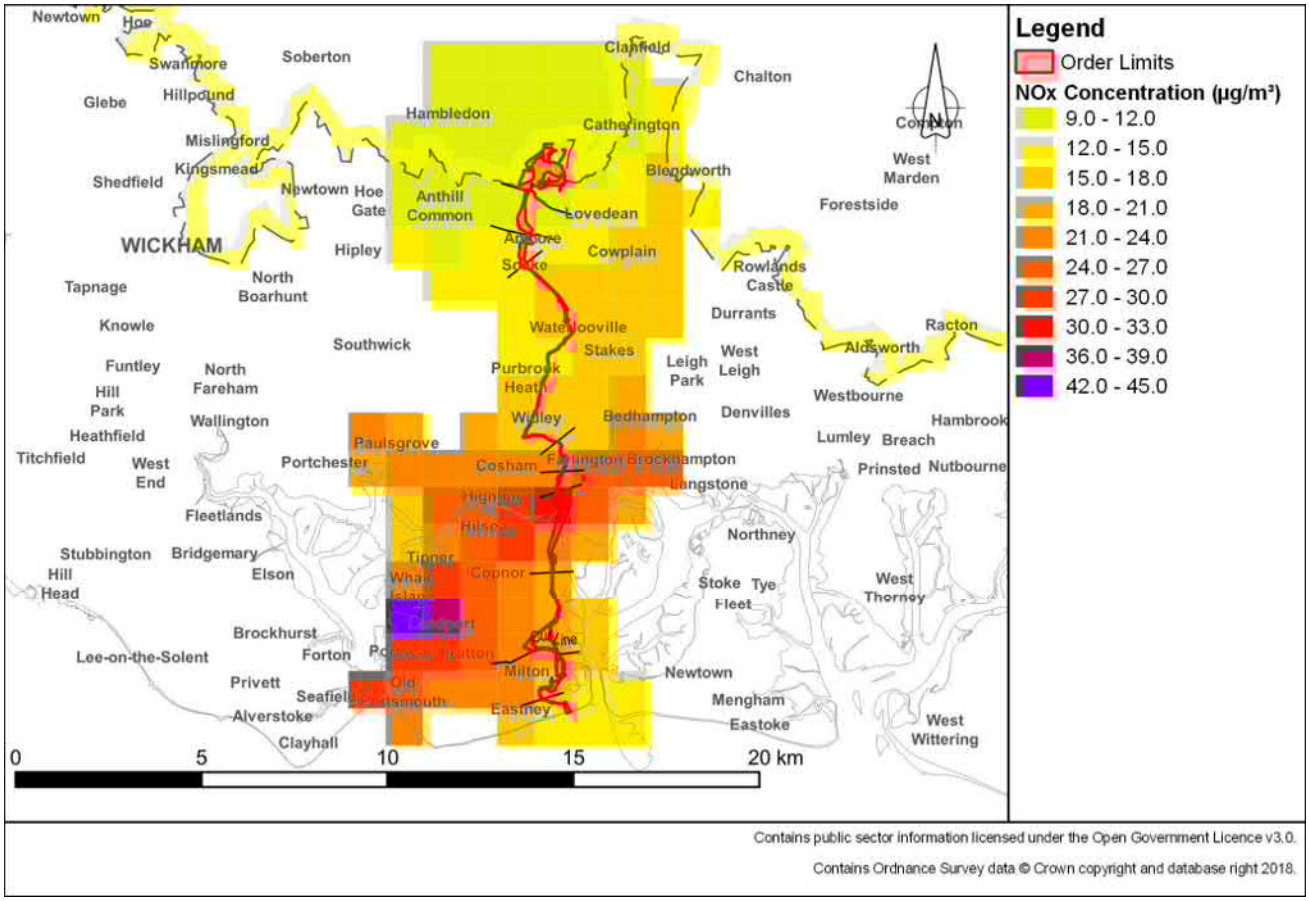

Plate 23.24 - 2026 Modelled NO_x Background

23.5.2.5. Plate 23.24 shows low future modelled concentrations of NO_x in the Hordean and Lovedean areas, with elevated concentrations at the southern extents of the Proposed Development. Of note are the high concentrations in the west of the City of Portsmouth that are in excess of the limit value of 30 µg/m³ for the protection of vegetation.

23.6. PREDICTED IMPACTS

23.6.1.1. This section describes the impacts associated with the Construction and Operational Stages from site activities, the temporary use of on-road construction vehicles, temporary road closures and diversions, Onshore Cable laying and pulling (including HDD operations) and welfare back up power generation as described in Section 23.1.1.

23.6.1.2. The construction site activity impact assessment results are presented according to the ten identified sections. For construction traffic, results are presented according to the six model verification zones as identified in Appendix 23.3 (Air Quality Traffic Modelling).

23.6.2. CONSTRUCTION SITE ACTIVITIES

23.6.2.1. Appendix 23.2 (IAQM Construction Assessment) provides a description of the proposed construction site activities for each Section of the Onshore Cable Corridor.

23.6.2.2. This section reports the derived risk of short-term temporary impacts from dust soiling, and on human health and ecology from site earthworks, construction activities and from trackout of material to the road network. These risks are derived using the assessed dust emission magnitude and the assessed sensitivity for each Section of the Onshore Cable Corridor with the matrices in Appendix 23.2 (IAQM Construction Assessment)

23.6.2.3. The derived risk is used to determine appropriate mitigation measures proposed specific to the works being undertaken in accordance with the recommended mitigation measures in the IAQM Guidance. For each construction site, the assessment of emission magnitude, sensitivity and recommended mitigation measures to inform the Onshore Outline CEMP (document reference 6.9) are described in Appendix 23.2 (IAQM Construction Assessment).

Embedded Mitigation

23.6.2.4. Mitigation identified by the dust risk assessment is embedded in the design in that impact significance is determined after the implementation of measures which will be applied through the Onshore Outline CEMP (document reference 6.9) which are the results of this dust risk assessment. This includes the operation of plant such as diesel generators and construction vehicles to a minimum of EU Stage III emissions standards for non-road diesel engines. Section 1.2 of Appendix 23.2 (IAQM Construction Assessment) describes the embedded mitigation measures to be incorporated into the ten Sections of the Onshore Cable Corridor of the Proposed Development design to avoid or reduce any likely significant effects during construction. These are incorporated into the Onshore Outline CEMP.

Section 1 – Lovedean (Converter Station Area)

Description of Works

23.6.2.5. Section 1 involves the construction of the Converter Station with activities being undertaken over a period of approximately 2.5 years. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 1 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.6. The overall dust risk for Section 1 is shown in Table 23.20.

Table 23.20 – Section 1 Overall Dust Risk

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	High Risk	High Risk	Low Risk
Human Health	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	Medium Risk	Medium Risk

23.6.2.7. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 1 this is a **High Risk**.

Significance

23.6.2.8. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23-9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 1 of the Proposed Development is considered to be **negligible**.

Section 2 – Anmore

Description of Works

23.6.2.9. Section 2 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 13 weeks. The works will be undertaken in 100 m sections. Further detail on the specific magnitude and conditions for earthworks, construction and trackout activities for Section 2 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.10. The overall dust risk for Section 2 is shown in Table 23.21.

Table 23.21 – Section 2 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	-
Human Health	Low Risk	Low Risk	Low Risk	-
Ecological	-	-	-	-

23.6.2.11. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 2 this is a **High Risk**.

Significance

23.6.2.12. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23-9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 2 of the Proposed Development is considered to be **negligible**.

Section 3 – Denmead/Kings Pond Meadow

Description of Works

23.6.2.13. Section 3 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 6 weeks per circuit including trenching, ducting and joint bay installation, and 13 weeks of Horizontal Directional Drilling (HDD) under Kings Pond. The trenching works will be undertaken in 100 m sections. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 3 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.14. The overall dust risk for Section 3 is shown in Table 23.22.

Table 23.22 – Section 3 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	-
Human Health	Low Risk	Low Risk	Low Risk	-
Ecological	-	-	-	-

23.6.2.15. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 3 this is a **High Risk**.

Significance

23.6.2.16. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23-9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 3 of the Proposed Development is considered to be **negligible**.

Section 4 – Hambledon Road to Farlington Avenue

Description of Works

23.6.2.17. Section 4 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 80 weeks per circuit for trenching, ducting and joint bay installation, assuming the trenching works will be undertaken in 100 m sections and the potential to install circuits in tandem. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 4 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.18. The overall dust risk for Section 4 is shown in Table 23.23.

Table 23.23 – Section 4 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	-	-	-	-

23.6.2.19. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 4 this is a **High Risk**.

Significance

23.6.2.20. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23.9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 4 of the Proposed Development is considered to be **negligible**.

Section 5 – Farlington

Description of Works

23.6.2.21. Section 5 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 15 weeks for tenching, ducting andjoint bay installation. The trenching works will be undertaken in 100 m sections, including on the public highway and footway. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 5 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.22. The overall dust risk for Section 5 is shown in Table 23.24.

Table 23.24 – Section 5 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	Medium Risk	High Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	-	-	-	-

23.6.2.23. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 5 this is a **High Risk**.

Significance

23.6.2.24. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23.9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 5 of the Proposed Development is considered to be **negligible**.

Section 6 – Zetland Field to Sainsbury's Car Park

Description of Works

23.6.2.25. Section 6 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 11 weeks per circuit for trenching, ducting and joint bay installation. The trenching works will be undertaken in 100 m sections. Further HDD works will be undertaken under the West Coastway Railway Line between Section 6 and Section 7 over a period of approximately 23 weeks. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 6 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.26. The overall dust risk for Section 6 is shown in Table 23.25.

Table 23.25 – Section 6 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	-
Human Health	Low Risk	Low Risk	Low Risk	-
Ecological	-	-	-	-

23.6.2.27. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 6 this is a **High Risk**.

Significance

23.6.2.28. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23.9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the impact of Section 6 of the Proposed Development is considered to be **negligible**.

Section 7 – Farlington Junction to Airport Service Road

Description of Works

23.6.2.29. This Section involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 9 weeks per circuit for trench ducting and joint bay installation, and approximately 31 weeks of HDD under Langstone Harbour. Approximately 23 weeks of HDD work under the West Coastway Railway Line will be shared between this Section 7 and Section 6. The trenching works will be undertaken in 100 m sections. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 6 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.30. The overall dust risk for Section 7 is shown in Table 23.26.

Table 23-26 – Section 7 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	High Risk	Medium Risk	High Risk

23.6.2.31. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 7 this is a **High Risk**.

Significance

23.6.2.32. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23.9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the impact of Section 7 of the Proposed Development is considered to be **negligible**.

Section 8 – Eastern Road (adjacent to great Salterns Golf Course) to Moorings Way

Description of Works

23.6.2.33. Section 8 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 27 weeks per circuit for trench ducting and joint bay installation.

23.6.2.34. A period of 2 weeks will be required of HDD drilling under Milton Common.

23.6.2.35. The trenching works will be undertaken in 100 m sections. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 8 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.36. The overall dust risk for Section 8 is shown in Table 23.27.

Table 23.27 – Section 8 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	High Risk	Medium Risk	High Risk

23.6.2.37. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 8 this is a **High Risk**.

Significance

23.6.2.38. The overall assessment is for a high risk in an area with high sensitivity receptors, which constitutes a major effect according to the matrix in Table 23.9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 8 of the Proposed Development is considered to be **negligible**.

Section 9 –Moorings Way to Bransbury Road

Description of Works

23.6.2.39. Section 9 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 14 weeks per circuit for trenching, ducting and joint bay installation. The trenching works will be undertaken in 100 m sections. HDD drilling will be undertaken under Eastney and Milton allotments for a period of 12 weeks. Further detail on the specific, magnitude and conditions for demolition, earthworks and construction activities for Section 9 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.40. The overall dust risk for Section 9 is shown in Table 23.28.

Table 23.28 – Section 9 Overall Dust Risk

Potential Impact	Dust Risk		
	Demolition	Earthworks	Construction
Dust Soiling	Medium Risk	Medium Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	Medium Risk	Medium Risk

23.6.2.41. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 9 this is a **Medium Risk**.

Significance

23.6.2.42. The overall assessment is for a medium risk in an area with high sensitivity receptors, which constitutes a major to moderate effect according to the matrix in Table 23-9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the effect of Section 9 of the Proposed Development is considered to be **negligible**.

Section 10 – Eastney (Landfall)

Description of Works

23.6.2.43. Section 10 involves the installation of ducting for the Onshore Cables and will be undertaken over a period of approximately 22 weeks per circuit for trenching, ducting per circuit, joint bay installation and ORS construction with approximately a further 44 weeks for HDD involved in creating the landfall for the cable. Construction of the ORS will also be required in the Fort Cumberland Road Car Park. The trenching works will be undertaken in 100 m sections. Further detail on the specific, magnitude and conditions for earthworks, construction and trackout activities for Section 10 is provided in Appendix 23.2 (IAQM Construction Assessment).

Impacts

23.6.2.44. The overall dust risk for Section 10 is shown in Table 23.29.

Table 23.29 – Section 10 Overall Dust Risk

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	Medium Risk	Medium Risk	Medium Risk

23.6.2.45. The overall dust risk is conservatively assigned based on the highest dust risk from all categories. For Section 10 this is a **Medium Risk**.

Significance

23.6.2.46. The overall assessment is for a medium risk in an area with high sensitivity receptors, which constitutes a major to moderate effect according to the matrix in Table 23.9. However, with the incorporation of the appropriate embedded mitigation from the Onshore Outline CEMP, the impact of Section 10 of the Proposed Development is considered to be **negligible**.

23.6.3. GENERATED CONSTRUCTION TRAFFIC

Description of Works

23.6.3.1. At the Converter Station, an anticipated HDV AADT of 86 was included in the model, in addition to 300 AADT for employee private cars.

23.6.3.2. Along the Onshore Cable Route, construction traffic movements through six of the sections were assumed in the traffic model as described in Chapter 22 (Traffic and Transport) (document reference 6.1.22), and as follows:

- **Section 1:** Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road;
- **Section 2**: Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road;
- **Section 3**: Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road – A3 Maurepas Way – A3 London Road;
- **Section 4:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A3(M) Junction 5 – A2030 Eastern Road;
- **Section 5:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road; and
- **Section 6 and 7:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road – A2030 Velder Avenue – A288 Milton Road – A288 Eastney Road – Bransbury Road.

23.6.3.3. Work within the Sections of the Onshore Cable Corridor will typically be undertaken in 100 m sections, served by 8 AADT HDV movements and 4 AADT LDV movements as described in detail in Chapter 22 (Traffic and Transport) (document reference 6.1.22).

Embedded Mitigation

23.6.3.4. Mitigation identified by risk assessment is embedded in the design in that impact significance is determined after the implementation of measures which will be applied through the Onshore Outline CEMP and Framework CTMP. This includes the operation of plant such as diesel generators and construction vehicles to a minimum of EU Stage III emissions standards for non-road diesel engines. Though no Euro standard is required for construction vehicles operating on the public highway the use of construction vehicles should be consistent with the requirements of the local air quality management measures such as Portsmouth Clean Air Zone.

Impacts

23.6.3.5. Within 200 m of the routes affected by construction traffic, the number of impacted receptors is shown in Table 23.30.

Table 23.30 - Impacted Receptors for Construction Traffic

Type	Receptor Count
Residential	13,071
Commercial	578
Community	55
Military	0
Total Number of Receptors	**13,704**

23.6.3.6. Within the numbers of receptors shown in Table 23.30, there are receptors with particular sensitivity, as shown in Table 23.31.

Table 23.31 - Particularly Sensitive Receptors for Construction Traffic

Sensitive Receptor	Receptor Count
Schools	16
Medical	11
Hospice	0
Sheltered Accommodation	1
Care Home	54

23.6.3.7. A summary of the results for generated construction traffic for the DS1 scenario is shown in Table 23.32.

Table 23.32 – Generated Construction Traffic Assessment Results for the Do-Something Scenario 1 (2026)

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	25.3	22.5	12.6
	DS1 (2026) Maximum Modelled Concentration	25.2	19.1	12.4
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	7,213	6,529	4,757
	No Change in Concentration	4,159	5,543	8,079
	Deterioration in Concentration	2,332	1,632	868
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-5.0	-3.6	-1.1
	Maximum Deterioration	8.4	1.8	0.5

23.6.3.8. The modelling results indicatean improvement of 0.1 µg/m³ in the highest predicted concentration at receptors within the study area for NO_2. There are improvements in the highest predicted concentrations for PM_{10} of a similar magnitude and a smaller improvement in the maximum $PM_{2.5}$ concentration.

23.6.3.9. The highest concentration of 25.2 µg/m³ under the DS1 scenario is located at a single residential receptor at 72 Lower Road, east of the Bedhampton Roundabout.

23.6.3.10. Table 23-32 shows the maximum predicted improvement of 5.0 µg/m³ in NO_2 concentrations is predicted at residential receptors along Hambledon Road between the junctions with Elettra Avenue and Aston Road.

23.6.3.11. The maximum predicted deterioration of 8.4 µg/m³ in NO_2 concentrations is located at high density residential receptors on Southdown View, Darnel Road and Foxtail Road, in the vicinity of the B2150 Hambledon Road.

23.6.3.12. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are predicted to improve at more receptors than are predicted to deteriorate under scenario DS1. Whilst a large number of properties are shown to experience a deterioration in concentrations of all pollutants, the highest predicted deterioration is of a lower magnitude than the highest predicted improvement for NO_2.

23.6.3.13. Areas of predicted improvement are modelled in the vicinity of planned temporary road closures as part of the Proposed Development.

23.6.3.14. A summary of the results for generated construction traffic for the DS2 scenario are shown in Table 23.33.

Table 23.33 – Generated Construction Traffic Assessment Results for the Do-Something Scenario 2 (2026)

		Construction Scenario DS2 2026		
Pollutant		NO2	PM10	PM2.5
Annual Mean Limit Value (µg/m³)		40	40	25
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	25.3	22.5	12.6
	DS2 (2026) Maximum Modelled Concentration	22.1	18.0	12.4
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	12,493	11,534	8,652
	No Change in Concentration	1,015	2,009	4,812
	Deterioration in Concentration	196	161	240
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-6.9	-4.9	-1.5
	Maximum Deterioration	5.7	0.8	0.2

23.6.3.15. The modelling results indicate that there is an improvement of 3.2 µg/m^3 in the highest predicted concentration at receptors within the study area for NO_2 in the DS2 scenario. This is a larger improvement than the DS1 scenario. The maximum DS2 concentration of 22.1 µg/m^3 is approximately 50 % of the objective. There are improvements in the highest predicted concentrations for PM_{10} of a similar magnitude and a smaller improvement in the maximum $PM_{2.5}$ concentration.

23.6.3.16. The highest predicted concentration of 22.1 µg/m³ under the DS2 scenario is located at a single residential receptor at 72 Lower Road, east of the Bedhampton Roundabout.

23.6.3.17. Table 23.33 shows the maximum predicted improvement of 6.9 µg/m³ in NO_2 concentrations is predicted at residential receptors along Mountbatten Drive, Alexander Close and Corbett Road.

23.6.3.18. The maximum predicted deterioration of 5.7 µg/m³ in NO_2 concentrations is located at two residential receptors, St Michaels and The Cedars on Hambledon Road.

23.6.3.19. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are predicted to improve at more receptors than are predicted to deteriorate under scenario DS2. More receptors will experience an improvement under DS2 than DS1. Whilst some properties are shown to experience a deterioration in concentrations of all pollutants, the highest predicted deterioration is of a lower magnitude than the highest predicted improvement for NO_2 PM_{10} and $PM_{2.5}$.

Significance

23.6.3.20. Both construction traffic scenarios have the potential to cause changes in local air quality which can impact high sensitivity receptors along the entire construction route. However, as more improvements in pollutant concentrations than deteriorations are predicted and no objective exceedances are likely, the effect of generated construction traffic on local air quality is assessed as a **negligible beneficial** significant effect.

23.6.4. TEMPORARY NON-CONSTRUCTION RELATED TRAFFIC EFFECTS

Description of Works

23.6.4.1. Temporary, non-construction related traffic emissions are those resulting from the use of alternative routes as a result of temporary diversions, road closures and other traffic management for the duration of the construction programme only. These are presented based on the model verification zones shown in Figure 23.12, and the presence of AQMAs.

Embedded Mitigation

23.6.4.2. Embedded mitigation is described in the Framework Traffic Management Strategy (document reference 6.3.22.1A) and includes the following:

- Temporary traffic signals to be used where lane closures or partial carriageway closure is required. During peak times the signals will be manually adjusted to ensure delays are kept to a minimum;
- Temporary road closures may be required where the highway is of insufficient width to accommodate works and have traffic continue to flow at a safe distance. Where this is required, diversion routes will be agreed with the local highways authority; and
- Construction hours will be scheduled to avoid peak times, especially where schools are in the immediate vicinity of works, and to avoid particular major scheduled events.

Impacts

23.6.4.3. The overall impacts for the DS1 scenario are presented in Figure 23.6, Figure 23.7 and Figure 23.10 and for the DS2 scenario are presented in Figure 23.9, Figure 23.8 and Figure 23.11.

Verification Zone 1

Verification Zone 1 Receptors

23.6.4.4. Within this Verification Zone, the number of impacted receptors is shown in Table 23.-34.

Table 23.34 - Impacted Receptors in Verification Zone 1

Type	Receptor Count
Residential	29,424
Commercial	1,719
Community	176
Military	7
Total Number of Receptors	**31,326**

23.6.4.5. Within the numbers of receptors shown in Table 23.34, there are receptors with particular sensitivity, as shown in Table 23.35.

Table 23.35 - Particularly Sensitive Receptors in Verification Zone 1

Sensitive Receptor	Receptor Count
Schools	80
Medical	33
Hospice	0
Sheltered Accommodation	0
Care Home	12

Verification Zone 1 Results

23.6.4.6. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.36.

Table 23-36 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for Verification Zone 1

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	39.7	23.0	14.0
	DS1 (2026) Maximum Modelled Concentration	39.2	23.0	14.1
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	1,920	482	0
	No Change in Concentration	22,967	25,747	30,504
	Deterioration in Concentration	6,439	5,097	822
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.7	-0.1	0
	Maximum Deterioration	0.5	0.2	0.1

23.6.4.7. The summary results in Table 23.36 show that there is an improvement of 0.5 µg/m^3 in the highest predicted concentration at receptors within Verification Zone 1 for NO_2 in the DS1 scenario. The maximum DS1 concentration of 39.2 µg/m^3 is just under the objective. Figure 23.7 Sheet 1 should be compared with Figure 23.6 Sheet 1 for a comparison of the DM against the DS1 scenario. There are imperceptible changes in the highest predicted concentrations for PM_{10} and $PM_{2.5}$.

23.6.4.8. The highest predicted concentration of 39.2 µg/m³ for NO_2 under the DS1 scenario. occurs at high occupancy residential receptors on Old Commercial Street and Grafton Street, closest to the M275.

23.6.4.9. The highest predicted deterioration of 0.5 µg/m³ in concentrations of NO_2 occurs at high occupancy residential receptors on Percy Chandler Street.

23.6.4.10. The highest predicted improvement of 0.7 µg/m³ in concentrations of NO_2 occur along Osier Way and Harbour Way, closest to the M275.

23.6.4.11. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at most of the receptors assessed for the DS1 scenario. However, more receptors will experience a deterioration than an improvement in this scenario. Whilst some properties are shown to experience a deterioration in concentrations of all pollutants, the highest predicted deterioration is of a lower magnitude than the highest predicted improvement for NO_2 PM_{10} and $PM_{2.5}$.

23.6.4.12. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.37.

Table 23.37 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for Verification Zone 1

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	39.7	23.0	14.0
	DS2 (2026) Maximum Modelled Concentration	39.2	23.0	14.1
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	3,605	183	298
	No Change in Concentration	26,618	28,854	30,655

	Deterioration in Concentration	1,103	2,289	373
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.7	-0.1	-0.1
	Maximum Deterioration	0.2	0.1	0.1

23.6.4.13. The summary results in Table 23.37 show that there is an improvement of 0.5 µg/m^3 in the highest predicted concentration at receptors within the study area for NO_2 in the DS2 scenario. The maximum DS2 concentration of 39.2 µg/m^3 is just under the objective which is the same as the DS1 scenario. Figure 23.8 Sheet 1 should be compared with Figure 23.6 Sheet 1 for a comparison of the DM against the DS2 scenario. There is a small reduction in the highest predicted concentrations for PM_{10} and $PM_{2.5}$.

23.6.4.14. The highest predicted concentration of 39.2 µg/m³ for NO_2 under the DS1 scenario occurs at high occupancy residential receptors on Old Commercial Street and Grafton Street, closest to the M275.

23.6.4.15. The highest predicted deterioration of 0.2 µg/m³ in concentrations of NO_2 occurs at high occupancy residential receptors on Percy Chandler Street.

23.6.4.16. The highest predicted improvement of 0.7 µg/m³ in concentrations of NO_2 occur along Osier Way and Harbour Way, closest to the M275.

23.6.4.17. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at most of the receptors assessed for the DS1 scenario. However, more receptors will experience a deterioration than an improvement in this scenario DS2. Whilst some properties are shown to experience a deterioration in concentrations of all pollutants, the highest predicted deterioration is of a lower magnitude than the highest predicted improvement for NO_2 PM_{10} and $PM_{2.5}$.

23.6.4.18. NO_2 concentrations at a selection of representative receptors is shown in Table 23.38, consisting of high sensitivity receptors highlighted in Table 23.35, Figure 23.7 Sheet 1 and Figure 23.8 Sheet 1, and within 50 m of the road centreline, and those receptors predicted to experience the highest concentrations or largest changes (> ±0.2 µg/m³).

Table 23.38 - Verification Zone 1 Representative Receptor Selection

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
I Glancey, 108 New Road, Portsmouth	18.5	18.7	0.2	Negligible	18.5	0.0	Negligible	No
Meadow House Rest Home, 47-51, 47 Stubbington Avenue, Portsmouth	17.8	17.6	-0.2	Negligible	17.8	0.0	Negligible	Yes
Stubbington Avenue Dental Practice, Ring Baxte & Reid, 12 Stubbington Avenue, Portsmouth	17.8	17.6	-0.2	Negligible	17.8	0.0	Negligible	Yes
Good Manors Day Nursery, Good Manors Day Nursery, Stubbington Lodge, 45 Stubbington Avenue, Portsmouth	17.8	17.6	-0.2	Negligible	17.8	0.0	Negligible	Yes
The Harbour School Stamshaw, Ranelagh	36.2	35.8	-0.4	Slight	36.1	-0.1	Negligible	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
Road, Portsmouth								
24 Grafton Street, Portsmouth	39.7	39.2	-0.5	Moderate	39.2	-0.5	Moderate	Yes
110 Grafton Street, Portsmouth	39.7	39.2	-0.5	Moderate	39.2	-0.5	Moderate	Yes
401j, 401 Old Commercial Road, Portsmouth	39.7	39.2	-0.5	Moderate	39.2	-0.5	Moderate	Yes
St. John Ambulance, St John Ambulance, 406-414, 406 Old Commercial Road, Portsmouth	39.7	39.2	-0.5	Moderate	39.2	-0.5	Moderate	Yes
14 Harbour Way, Portsmouth	36.8	36.1	-0.7	Slight	36.1	-0.7	Slight	No
4 Osier Close, Portsmouth	36.8	36.1	-0.7	Slight	36.1	-0.7	Slight	No
Flat 5, Horndean House, Percy Chandler Street, Portsmouth	24.9	25.4	0.5	Negligible	25.1	0.2	Negligible	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
Flat 1, Horndean House, Percy Chandler Street, Portsmouth	24.9	25.4	0.5	Negligible	25.1	0.2	Negligible	No

Verification Zone 1 Significance

23.6.4.19. The magnitude of effects according to the IAQM criteria at 31,224 receptors out of 31,326 is negligible, and there are a greater number of receptors predicted to experience an improvement than a deterioration in concentrations of NO_2, with the opposite true for concentrations of particulates. Therefore, the overall significance of the effects in verification zone 1 is assessed as **negligible beneficial**.

Verification Zone 2

Verification Zone 2 Receptors

23.6.4.20. Within this Verification Zone, the number of impacted receptors is shown in Table 23.39.

Table 23.39 - Impacted Receptors in Verification Zone 2

Type	Receptor Count
Residential	9,206
Commercial	410
Community	55
Military	0
Total Number of Receptors	**9,671**

23.6.4.21. Within the numbers of receptors shown in Table 23.39, there are receptors with particular sensitivity, as shown in Table 23.40.

Table 23.40 - Particularly Sensitive Receptors in Verification Zone 2

Sensitive Receptor	Receptor Count
Schools	14
Medical	22
Hospice	4
Sheltered Accommodation	1
Care Home	42

Verification Zone 2 Results

23.6.4.22. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.41.

Table 23.41 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for Verification Zone 2

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	22.3	20.3	13.0
	DS1 (2026) Maximum Modelled Concentration	22.2	20.3	13.0
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	2,741	2,318	477
	No Change in Concentration	4,082	5,756	8,648
	Deterioration in Concentration	2,848	1,597	546
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.8	-0.3	-0.1
	Maximum Deterioration	0.4	0.2	0.1

23.6.4.23. The summary results in Table 23.41 show that there is a negligible improvement of 0.1 µg/m^3 in the highest predicted concentration at receptors within Verification Zone 2 for NO_2 in the DS1 scenario. The maximum DS1 concentration of 22.2 µg/m^3 is significantly under the objective. Figure 23.7 Sheet 2 should be compared with Figure 23.6 Sheet 2 for a comparison of the DM against the DS1 scenario. There is no change in the highest predicted concentrations for PM_{10} and $PM_{2.5}$.

23.6.4.24. The highest predicted concentration of 22.2 µg/m³ for NO_2 under the DS1 scenario occurs at seven residential receptors and two commercial receptors at the junction of Baffins Road and Hayling Avenue.

23.6.4.25. The highest predicted deterioration of 0.1 µg/m³ in concentrations of NO_2 occurs at a total of 2,371 receptors within verification zone 2.

23.6.4.26. The highest predicted improvement of 0.3 µg/m³ in concentrations of NO_2 occurs at 67 high density residential receptors and nine commercial receptors in the area around Warren Avenue and Moorings Way, and at the Mallard Trust Day Opportunity Centre.

23.6.4.27. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at the majority of the receptors assessed for the DS1 scenario. For NO_2 and $PM_{2.5}$, more receptors are predicted to experience a deterioration, whilst for PM_{10} more receptors are predicted to experience an improvement in concentrations. Overall, the level of maximum improvement is greater than the maximum deterioration, except for $PM_{2.5}$ where they are equal.

23.6.4.28. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.42.

Table 23.42 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for Verification Zone 2

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	22.3	20.3	13.0
	DS2 (2026) Maximum Modelled Concentration	22.3	20.3	13.1
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
	Improvement in Concentration	1,604	535	21

		Construction Scenario DS2 2026		
Total Number of Properties	No Change in Concentration	7,295	8,267	9,089
	Deterioration in Concentration	772	869	561
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.3	-0.1	-0.1
	Maximum Deterioration	0.1	0.1	0.1

23.6.4.29. The summary results in Table 23.42 show that there is no change in the highest predicted concentration at receptors within the study area for NO_2 in the DS2 scenario. Figure 23.8 Sheet 2 should be compared with Figure 23.6 Sheet 2 for a comparison of the DM against the DS2 scenario. There is a negligible 0.1 µg/m³ increase in the highest predicted concentration of $PM_{2.5}$.

23.6.4.30. The highest predicted concentration of 22.3 µg/m³ for NO_2 under the DS2 scenario occurs at seven residential receptors and two commercial receptors at the junction of Baffins Road and Hayling Avenue.

23.6.4.31. The highest predicted deterioration of 0.1 µg/m³ in concentrations of NO_2 occurs at a total of 772 receptors within verification zone 2.

23.6.4.32. The highest predicted improvement of 0.3 µg/m³ in concentrations of NO_2 occurs at 67 high density residential receptors and nine commercial receptors in the area around Warren Avenue and Moorings Way, and at the Mallard Trust Day Opportunity Centre.

23.6.4.33. For all modelled pollutants, concentrations are not predicted to change at the majority of receptors assessed for the DS2 scenario. Whilst a larger number of receptors are predicted to experience an improvement in ambient NO_2 concentrations, a larger number of receptors are predicted to experience a deterioration in ambient particulate concentrations.

23.6.4.34. NO_2 concentrations at a selection of representative receptors is shown in Table 23-.43 consisting of high sensitivity receptors highlighted in Table 23.40, Figure 23.7 Sheet 2 and Figure 23.8 Sheet 2, and within 50 m of the road centreline, and those receptors predicted to experience the highest concentrations or largest changes (> ±0.2 µg/m³).

Table 23.43 - Verification Zone 2 Representative Receptor Selection

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
My Dentist, B P Henning Dental Surgeon, 310 Chichester Road, Portsmouth	20.1	20.3	0.2	Negligible	20.1	0.0	Negligible	No
Doctors Surgery, 111 Copnor Road, Portsmouth	20.1	20.3	0.2	Negligible	20.1	0.0	Negligible	No
Mary Rose Manor, Copnor Road, Portsmouth	18.1	18.3	0.2	Negligible	18.1	0.0	Negligible	No
Shearwater, 18 Moorings Way, Southsea	18.7	18.5	-0.2	Negligible	18.6	-0.1	Negligible	Yes
Portsmouth College, Tangier Road, Portsmouth	14.1	13.9	-0.2	Negligible	14	-0.1	Negligible	No
Tangier Road Childrens Home, 265-267, 265 Tangier Road, Portsmouth	14.1	13.9	-0.2	Negligible	14	-0.1	Negligible	No
94 Eastern Road, Portsmouth	19.7	19.3	-0.4	Negligible	19.6	-0.1	Negligible	Yes

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
5 Hayling Avenue, Portsmouth	22.3	22.2	-0.1	Negligible	22.3	0.0	Negligible	No
3 Plover Reach, Southsea	21.8	21.1	-0.7	Negligible	21.5	-0.3	Negligible	Yes
18 The Haven, Southsea	21.8	21.1	-0.7	Negligible	21.5	-0.3	Negligible	Yes

Verification Zone 2 Significance

23.6.4.35. The magnitude of effects according to the IAQM criteria at all receptors in this zone is negligible, and slightly more receptors predicted to experience an improvement in NO_2 concentrations than a deterioration. Therefore, the overall significance of the effects in verification zone 2 is assessed as **negligible beneficial**.

Verification Zone 3

Verification Zone 3 Receptors

23.6.4.36. Within Verification Zone 3, the number of impacted receptors is shown in Table 23.44.

Table 23.44 - Impacted Receptors in Verification Zone 3

Type	Receptor Count
Residential	2,868
Commercial	398
Community	17
Military	0
Total Number of Receptors	**3,283**

23.6.4.37. Within the numbers of receptors shown in Table 23.44, there are receptors with particular sensitivity, as shown in Table 23.45.

Table 23.45 - Particularly Sensitive Receptors in Verification Zone 3

Sensitive Receptor	Receptor Count

Schools	10
Medical	0
Hospice	0
Sheltered Accommodation	0
Care Home	82

Verification Zone 3 Results

23.6.4.38. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.46.

Table 23.46 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for Verification Zone 3

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	24.2	21.5	12.4
	DS1 (2026) Maximum Modelled Concentration	24.3	21.7	12.4
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	67	120	16
	No Change in Concentration	2,370	2,664	2,767
	Deterioration in Concentration	846	499	500
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.5	-0.3	-0.1
	Maximum Deterioration	0.4	0.2	0.1

23.6.4.39. The summary results in Table 23.46 show a negligible predicted deterioration in the maximum concentration at receptors within Verification Zone 3 for NO_2 of 0.1 µg/m³ in the DS1 scenario. The maximum DS1 concentration of 24.3 µg/m^3 is under the objective. Figure 23.7 Sheet 3 should be compared with Figure 23.6 Sheet 3 for a comparison of the DM against the DS1 scenario. There is a negligible increase in the highest predicted concentrations for PM_{10} and no change in the highest predicted concentration of $PM_{2.5}$.

23.6.4.40. The highest predicted concentration of 24.3 µg/m³ for NO_2 under the DS1 scenario occurs at three residential receptors on Northern Parade at its nearest point to the A3 London Road.

23.6.4.41. The highest predicted deterioration of 0.4 µg/m³ in concentrations of NO_2 occurs at 11 commercial receptors on Dundas Lane, immediately opposite the Lord Nelson School.

23.6.4.42. The highest predicted improvement of 0.5 µg/m³ in concentrations of NO_2 occurs at one residential receptor and three commercial receptors at the junction of Burrfields Road and Eastern Road.

23.6.4.43. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at the majority of the receptors assessed for the DS1 scenario. For all modelled pollutants a greater number of receptors are predicted to experience a deterioration in receptors compared to those that are predicted to experience an improvement.

23.6.4.44. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.47.

Table 23.47 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for Verification Zone 3

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	24.2	21.5	12.4
	DS2 (2026) Maximum Modelled Concentration	24.3	21.6	12.4
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
	Improvement in Concentration	236	52	7

Total Number of Properties	No Change in Concentration	2,175	2,695	2,928
	Deterioration in Concentration	872	536	348
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.3	-0.2	-0.1
	Maximum Deterioration	0.4	0.2	0.1

23.6.4.45. The summary results in Table 23.47 show a negligible predicted deterioration in the maximum concentration at receptors within Verification Zone 3 for NO_2 of 0.1 µg/m³ in the DS1 scenario. The maximum DS2 concentration of 24.3 µg/m^3 is under the objective. Figure 23.8 Sheet 3 should be compared with Figure 23.6 Sheet 3 for a comparison of the DM against the DS2 scenario. There is a negligible increase in the highest predicted concentrations for PM_{10} and no change in the highest predicted concentration of $PM_{2.5}$.

23.6.4.46. The highest predicted concentration of 24.3 µg/m³ for NO_2 under the DS2 scenario occurs at 59 high density residential receptors and four commercial receptors at the junction of Military Road with the A3 London Road.

23.6.4.47. The highest predicted deterioration of 0.4 µg/m³ in concentrations of NO_2 occurs at 11 commercial receptors on Dundas Lane, immediately opposite the Lord Nelson School.

23.6.4.48. The highest predicted improvement of 0.3 µg/m³ in concentrations of NO_2 occurs at six commercial receptors on Eastern Road opposite the Langstone Harbour Sports Ground, and at one residential receptor opposite the junction of Burrfields Road with Eastern Road.

23.6.4.49. For all modelled pollutants, concentrations are not predicted to be unchanged at the majority of receptors assessed for the DS2 scenario. A larger number of receptors are predicted to experience an improvement in ambient concentrations of all modelled pollutants compared to those predicted to experience an improvement.

23.6.4.50. NO_2 concentrations at a selection of representative receptors are shown in Table 23.48, consisting of high sensitivity receptors highlighted in Table 23.45, Figure 23.7 Sheet 3 and Figure 23.8 Sheet 3, and within 50 m of the road centreline, and those receptors predicted to experience the highest concentrations or largest changes (> ±0.2 µg/m³).

Table 23.48 - Verification Zone 3 Representative Receptor Selection

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
Admiral Lord Nelson School, Dundas Lane, Portsmouth	16.5	16.8	0.3	Negligible	16.8	0.3	Negligible	No
Dundas Lane, Portsmouth	16.4	16.8	0.4	Negligible	16.8	0.4	Negligible	No
Eastern Road Car Sales, Eastern Road, Portsmouth	16.9	16.4	-0.5	Negligible	16.7	-0.2	Negligible	No
Texaco Ltd, Texaco, Eastern Road Service Station, Eastern Road, Portsmouth	16.9	16.4	-0.5	Negligible	16.7	-0.2	Negligible	No
Bilton Way, Portsmouth	17.4	17	-0.4	Negligible	17.1	-0.3	Negligible	No

Verification Zone 3 Significance

23.6.4.51. The magnitude of effects according to the IAQM criteria at all 3,283 receptors in this zone is negligible, however more receptors are predicted to experience a deterioration than improvement in concentrations of all modelled pollutants. Therefore, the overall significance of the effects in verification zone 3 is assessed as **negligible adverse**.

Verification Zone 4

Verification Zone 4 Receptors

23.6.4.52. Within Verification Zone 4, the number of impacted receptors is shown in Table 23.49.

Table 23.49 - Impacted Receptors in Verification Zone 4

Type	Receptor Count
Residential	4,890
Commercial	363
Community	49
Military	0
Total Number of Receptors	**5,302**

23.6.4.53. Within the numbers of receptors shown in Table 23-49, there are receptors with particular sensitivity, as shown in Table 23-.50.

Table 23.50 - Particularly Sensitive Receptors in Verification Zone 4

Sensitive Receptor	Receptor Count
Schools	11
Medical	24
Hospice	0
Sheltered Accommodation	0
Care Home	11

Verification Zone 4 Results

23.6.4.54. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.51.

Table 23.51 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for Verification Zone 4

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	31.6	22.0	13.0
	DS1 (2026) Maximum Modelled Concentration	31.3	22.0	13.0
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	386	289	247
	No Change in Concentration	3,400	4,174	4,770
	Deterioration in Concentration	1,516	839	285
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.6	-0.3	-0.1
	Maximum Deterioration	0.5	0.2	0.1

23.6.4.55. The modelling results indicatethat there is an improvement of 0.1 µg/m^3 in the highest predicted concentration at receptors within Verification Zone 4 for NO_2 in the DS1 scenario. The maximum DS1 concentration of 31.3 µg/m^3 shown in Table 23-51 is under the objective. Figure 23.7 Sheet 4 should be compared with Figure 23.6 Sheet 4 for a comparison of the DM against the DS1 scenario. There is no change in the highest predicted concentrations for PM_{10} and $PM_{2.5}$.

23.6.4.56. The highest predicted concentration of 31.3 µg/m³ for NO_2 under the DS1 scenario occurs at 16 residential receptors on either side of the junction of The Old Road, with Highbury Grove.

23.6.4.57. The highest predicted deterioration of 0.5 µg/m³ in concentrations of NO_2 occurs at the Inland Revenue offices located north of Portsbridge Roundabout adjacent to the A397 Northern Road.

23.6.4.58. The highest predicted improvement of 0.6 µg/m³ in concentrations of NO_2 occurs at 16 residential receptors at the junction of the A2030 Havant Road with Eastern Road.

23.6.4.59. For all modelled pollutants, concentrations are not predicted to change at the majority of the receptors assessed for the DS1 scenario. For all modelled pollutants, more receptors are predicted to experience a deterioration than an improvement. Overall, the level of maximum improvement is greater than the maximum deterioration, except for $PM_{2.5}$ where they are equal.

23.6.4.60. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.52.

Table 23.52 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for Verification Zone 4

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	31.6	22.0	13.0
	DS2 (2026) Maximum Modelled Concentration	31.4	22.1	13.0
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	309	249	247
	No Change in Concentration	3,510	4,181	4,778
	Deterioration in Concentration	1,483	872	277
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.6	-0.3	-0.1
	Maximum Deterioration	0.2	0.2	0.1

23.6.4.61. The summary results in Table 23.-52 show that there is a predicted negligible improvement of 0.2 µg/m³ in the maximum concentration of NO_2 and a predicted negligible improvement of 0.1 µg/m³ in the maximum concentration of PM_{10}. The maximum concentration of $PM_{2.5}$ is predicted to be unchanged. Figure 23.8 Sheet 4 should be compared with Figure 23.6 Sheet 4 for a comparison of the DM against the DS2 scenario.

23.6.4.62. The highest predicted concentration of 31.4 µg/m³ for NO_2 under the DS2 scenario occurs at 16 residential receptors on either side of the junction of The Old Road, with Highbury Grove.

23.6.4.63. The highest predicted deterioration of 0.2 µg/m³ in concentrations of NO_2 occurs at a total of 147 receptors in the area around Eveleigh Road, and include Solent Infant School.

23.6.4.64. The highest predicted improvement of 0.6 µg/m³ in concentrations of NO_2 occurs at 16 residential receptors at the junction of the A2030 Havant Road with Eastern Road.

23.6.4.65. For all modelled pollutants, concentrations are not predicted to change at the majority of receptors assessed for the DS2 scenario. Whilst a larger number of receptors are predicted to experience a deterioration in concentrations for all modelled pollutants, the maximum improvement in concentrations are predicted to be larger than the maximum deterioration, except for $PM_{2.5}$ where they are of equal magnitude.

23.6.4.66. NO_2 concentrations at a selection of representative receptors is shown in Table 23.53 consisting of high sensitivity receptors highlighted in Table 23.50, Figure 23.7 Sheet 4 and Figure 23.8 Sheet 4, and within 50 m of the road centreline, and those receptors predicted to experience the highest concentrations or largest changes (> ±0.2 µg/m³).

Table 23.53 - Verification Zone 4 Representative Receptor Selection

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
Solent Infant School, Evelegh Road, Portsmouth	14.9	15.1	0.2	Negligible	15.1	0.2	Negligible	No
65 Evelegh Road, Portsmouth	14.9	15.1	0.2	Negligible	15.1	0.2	Negligible	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
A N A Treatment Centres Ltd, Fleming House, Waterworks Road, Portsmouth	15.6	15.3	-0.3	Negligible	15.3	-0.3	Negligible	No
331 Havant Road, Portsmouth	15.2	15.4	0.2	Negligible	15.4	0.2	Negligible	No
3 Highbury Grove, Portsmouth	31.6	31.3	-0.3	Negligible	31.4	-0.2	Negligible	No
6 Highbury Grove, Portsmouth	31.6	31.3	-0.3	Negligible	31.4	-0.2	Negligible	No
11 Highbury Grove, Portsmouth	31.6	31.3	-0.3	Negligible	31.4	-0.2	Negligible	No
77 Lealand Road, Portsmouth	15.8	15.4	-0.4	Negligible	15.4	-0.4	Negligible	No
4 Copsey Close, Portsmouth	16.6	16.0	-0.6	Negligible	16.0	-0.6	Negligible	No

Verification Zone 4 Significance

23.6.4.67. The magnitude of effects according to the IAQM criteria at all 5,302 receptors in this zone is negligible, and a larger number of receptors are predicted to experience a deterioration in the concentrations of all modelled pollutants. Therefore, the overall significance of the effects in verification zone 4 is assessed as **negligible adverse**.

Verification Zone 5

Verification Zone 5 Receptors

23.6.4.68. Within Verification Zone 5, the number of impacted receptors is shown in Table 23.54.

Table 23.54 - Impacted Receptors in Verification Zone 5

Type	Receptor Count
Residential	7,324
Commercial	255
Community	37
Military	1
Total Number of Receptors	**7,617**

23.6.4.69. Within the numbers of receptors shown in Table 23.54, there are receptors with particular sensitivity, as shown in Table 23.55.

Table 23.55 - Particularly Sensitive Receptors in Verification Zone 5

Sensitive Receptor	Receptor Count
Schools	11
Medical	7
Hospice	0
Sheltered Accommodation	0
Care Home	18

Verification Zone 5 Results

23.6.4.70. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.56.

Table 23.56 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for Verification Zone 5

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	30.3	25.1	13.4
	DS1 (2026) Maximum Modelled Concentration	30.7	25.4	13.5
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	1,048	1,015	716
	No Change in Concentration	1,512	2,793	5,070
	Deterioration in Concentration	5,057	3,809	1,831
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-1.9	-1.1	-0.3
	Maximum Deterioration	1.7	1.0	0.4

23.6.4.71. The summary results in Table 23.56 show that there is a predicted deterioration in the highest concentration for all modelled pollutants at receptors within Verification Zone 5 under the DS1 scenario. Figure 23.7 Sheet 5 should be compared with Figure 23.6 Sheet 5 for a comparison of the DM against the DS1 scenario. The maximum predicted NO_2 concentration of 30.7 µg/m^3 is under the objective.

23.6.4.72. The highest predicted concentration of 30.7 µg/m³ for NO_2 under the DS1 scenario occurs at 6 residential receptors north of the junction of London Road with the B2177 Portsdown Hill Road.

23.6.4.73. The highest predicted deterioration of 1.7 µg/m³ in concentrations of NO_2 occurs at 17 residential receptors on Maralyn Road, up to 200m from Stakes Hill Road.

23.6.4.74. The highest predicted improvement of 1.9 µg/m³ in concentrations of NO_2 occurs at 4 residential receptors north of the junction of London Road with the B2177 Portsdown Hill Road.

23.6.4.75. For NO_2 and PM_{10} the majority of receptors in Verification Zone 5 are predicted to experience a deterioration in concentrations, whilst for $PM_{2.5}$ the majority are predicted to experience no change. Overall, the predicted magnitude of maximum

improvement is greater than the maximum deterioration, except for $PM_{2.5}$ where the predicted magnitude of maximum deterioration is greater.

23.6.4.76. The following receptors are presented in response to a request from the EHO for Havant:

- At No. 2 Bedhampton Hill, Havant, representative of concentrations in the Portsdown Hill area of Havant, an NO_2 concentration of 23.5 µg/m³ is predicted, which represents an increase of 0.5 µg/m³;
- At No. 262 Stakes Hill Road, Havant, representative of the Stakes Hill area, an NO_2 concentration of 17.7 µg/m³ is predicted, which represents an increase of 0.8 µg/m³;
- At No. 32 Hurstville Drive, Havant, representative of the Hurstville area, an NO_2 concentration of 15.9 µg/m³ is predicted, which represents an increase of 1.5 µg/m³; and
- At No. 54. Westbrook Grove, Havant, representative of the Aldermoor area, an NO_2 concentration of 13.7 µg/m³ is predicted, which represents an increase of 0.7 µg/m³.

23.6.4.77. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.57.

Table 23.57 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for Verification Zone 5

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	30.3	25.1	13.4
	DS2 (2026) Maximum Modelled Concentration	30.6	25.3	13.5
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	1,052	1,021	716
	No Change in Concentration	1,533	2,772	5,065
	Deterioration in Concentration	5,032	3,824	1,836

		Construction Scenario DS2 2026		
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-2.0	-1.1	-0.3
	Maximum Deterioration	1.7	1.0	0.4

23.6.4.78. The summary results in Table 23.57 show that there is a predicted deterioration in the highest concentration for all modelled pollutants at receptors within Verification Zone 5 under the DS2 scenario. The maximum predicted NO_2 concentration of 30.6 µg/m^3 is under the objective. Figure 23.8 Sheet 5 should be compared with Figure 23.6 Sheet 5 for a comparison of the DM against the DS2 scenario.

23.6.4.79. The highest predicted concentration of 30.6 µg/m³ for NO_2 under the DS2 scenario occurs at 6 residential receptors north of the junction of London Road with the B2177 Portsdown Hill Road.

23.6.4.80. The highest predicted deterioration of 1.7 µg/m³ in concentrations of NO_2 occurs at 17 residential receptors on Maralyn Road, up to 200m from Stakes Hill Road.

23.6.4.81. The highest predicted improvement of 2.0 µg/m³ in concentrations of NO_2 occurs at 4 residential receptors north of the junction of London Road with the B2177 Portsdown Hill Road.

23.6.4.82. For NO_2 and PM_{10} a larger number of receptors are predicted to experience a deterioration in concentrations compared to those experiencing no change or an improvement, except for $PM_{2.5}$ where are larger number of receptors are predicted to experience no change. The maximum predicted improvements in concentrations of all modelled pollutants is greater than the maximum predicted deterioration.

23.6.4.83. The following receptor results are presented in response to a request from the EHO for Havant:

- At No. 2 Bedhampton Hill, Havant, representative of concentrations in the Portsdown Hill area of Havant, an NO_2 concentration of 23.5 µg/m³ is predicted, which represents an increase of 0.5 µg/m³;
- At No. 262 Stakes Hill Road, Havant, representative of the Stakes Hill area, an NO_2 concentration of 17.7 µg/m³ is predicted, which represents an increase of 0.8 µg/m³;
- At No. 32 Hurstville Drive, Havant, representative of the Hurstville area, an NO_2 concentration of 15.9 µg/m³ is predicted, which represents an increase of 1.5 µg/m³; and
- At No. 54. Westbrook Grove, Havant, representative of the Aldermoor area, an NO_2 concentration of 13.7 µg/m³ is predicted, which represents an increase of 0.7 µg/m³.

23.6.4.84. NO_2 concentrations at a selection of representative receptors is shown in Table 23.58 consisting of high sensitivity receptors highlighted in Table 23.55, Figure 23.7 Sheet 5 and Figure 23.8 Sheet 5, and within 50 m of the road centreline, and within 50 m of the road centreline, and those receptors predicted to experience the highest concentrations or largest changes (> ±0.2 µg/m³).

Table 23.58 - Verification Zone 5 Representative Receptor Selection

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
K B Griffin Builders, Towers Farm, 16 Portsdown Hill Road, Havant	23.0	23.5	0.5	Negligible	23.5	0.5	Negligible	No
36 Hurstville Drive, Waterlooville	14.4	15.9	1.5	Negligible	15.9	1.5	Negligible	No
Edenvale Nursing Home, 63-65, 63 Silvester Road, Waterlooville	13.1	13.8	0.7	Negligible	13.8	0.7	Negligible	No
2 Padnell Road, Waterlooville	14.6	14.4	-0.2	Negligible	14.4	-0.2	Negligible	No
Queenswood Surgery, 223 London Road, Waterlooville	14.8	15.1	0.3	Negligible	15.1	0.3	Negligible	No
197 London Road, Waterlooville	14.8	15.1	0.3	Negligible	15.1	0.3	Negligible	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
Trimak Ltd, Cowpalin Family Practice, 26-30, 26 London Road, Waterlooville	14.6	14.4	-0.2	Negligible	14.4	-0.2	Negligible	No
Purbrook Junior & Infant School, Aldermoor Road East, Waterlooville	12.9	13.7	0.8	Negligible	13.7	0.8	Negligible	No
Oaklands Care Home, 216 Stakes Hill Road, Waterlooville	16.0	16.7	0.7	Negligible	16.7	0.7	Negligible	No
Latham Lodge Rest Home, 137-139, 137 Stakes Road, Waterlooville	15.9	16.1	0.2	Negligible	16.2	0.3	Negligible	No
Belmont Castle Rest Home, 18-20, 18 Portsdown Hill Road, Havant	23.0	23.5	0.5	Negligible	23.5	0.5	Negligible	No
79 Silvester Road, Waterlooville	13.1	13.8	0.7	Negligible	13.8	0.7	Negligible	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
31 Trefoil Close, Waterlooville	18.8	20.5	1.7	Negligible	20.5	1.7	Negligible	No
2 Lower Bere Wood, Waterlooville	14.4	15.9	1.5	Negligible	15.9	1.5	Negligible	No
9 Trefoil Close, Waterlooville	19.4	20.6	1.2	Negligible	20.6	1.2	Negligible	No
28 Hurstville Drive, Waterlooville	14.4	15.5	1.1	Negligible	15.5	1.1	Negligible	No
1 Dogwood Dell, Waterlooville	15.0	15.9	0.9	Negligible	15.9	0.9	Negligible	No
3 Lily Avenue, Waterlooville	15.1	14.9	-0.2	Negligible	14.9	-0.2	Negligible	No
45 Hurstville Drive, Waterlooville	15.9	15.6	-0.3	Negligible	15.6	-0.3	Negligible	No
14 Siskin Grove, Waterlooville	25.2	24.8	-0.4	Negligible	24.8	-0.4	Negligible	No
Broadways Coffee Shop, 14 London Road, Waterlooville	12.9	12.4	-0.5	Negligible	12.4	-0.5	Negligible	No
33c, 33 London	19.7	19.1	-0.6	Negligible	19.1	-0.6	Negligible	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
Road, Waterlooville								
15 London Road, Waterlooville	19.8	19.1	-0.7	Negligible	19.1	-0.7	Negligible	No
44 Stakes Road, Waterlooville	15.8	15.0	-0.8	Negligible	15	-0.8	Negligible	No
9 Debney Lodge, Mey Close, Waterlooville	23.2	21.4	-1.8	Negligible	21.4	-1.8	Negligible	No
179 Park Avenue, Waterlooville	15	13.2	-1.8	Negligible	13.3	-1.7	Negligible	No
2 Boundary Way, Portsmouth	27.3	25.4	-1.9	Negligible	25.3	-2	Negligible	No

Verification Zone 5 Significance

23.6.4.85. The magnitude of effects according to the IAQM criteria at all 7,167 receptors in this zone is negligible, and a larger number of receptors are predicted to experience a deterioration in the concentration of all pollutants. In addition, concentrations of NO_2 at all of the specific receptors requested by Havant Borough Council increase, Therefore the overall significance of the effects in verification zone 5 is assessed as **negligible adverse**.

Verification Zone 6

Verification Zone 6 Receptors

23.6.4.86. Within Verification Zone 6, the number of impacted receptors is shown in Table 23.59.

Table 23.59 - Impacted Receptors in Verification Zone 6

Type	Receptor Count
Residential	4,004
Commercial	445
Community	22
Military	2
Total Number of Receptors	**4,473**

23.6.4.87. Within the numbers of receptors shown in Table 23.59, there are receptors with particular sensitivity, as shown in Table 23.60.

Table 23.60 - Particularly Sensitive Receptors in Verification Zone 6

Sensitive Receptor	Receptor Count
Schools	9
Medical	1
Hospice	0
Sheltered Accommodation	0
Care Home	6

Verification Zone 6 Results

23.6.4.88. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.61.

Table 23.61 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for Verification Zone 6

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	**40.9**	31.0	15.8
	DS1 (2026) Maximum Modelled Concentration	**40.2**	31.1	15.8
	Removed Exceedances	0	0	0

	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	1,908	72	81
	No Change in Concentration	2,553	4,168	4,236
	Deterioration in Concentration	12	233	156
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.8	-0.2	-0.1
	Maximum Deterioration	0.1	0.1	0.1

23.6.4.89. The summary results in Table 23-61 show an exceedance under the Do-Minimum scenario for NO_2. This is expected to improve by 0.8 µg/m³ Verification Zone 6 in the DS1 scenario. This is a slight beneficial impact using the IAQM descriptors, and should be read in conjunction with the information on verification and model error in Appendix 23.3 (Air Quality Traffic Modelling) of the ES Volume 3 (document reference 6.3.23.3) taking into account that it was decided not to use the model correction factors in this zone due to a large increase in the model error. Figure 23.7 Sheet 6 should be compared with Figure 23.6 Sheet 6 for a comparison of the DM against the DS1 scenario. There is negligible improvement in the highest predicted concentrations for PM_{10} and no change for $PM_{2.5}$.

23.6.4.90. The highest predicted concentration of 40.2 µg/m³ for NO_2 under the DS1 scenario occurs at 83 residential receptors and one commercial receptor adjacent to the eastbound carriageway of the M27 in the Portsdown Hill and Paulsgrove areas. These same receptors are also predicted to experience the highest improvement of 0.8 µg/m³.

23.6.4.91. The highest predicted deterioration of 0.1 µg/m³ in concentrations of NO_2 occurs at locations adjacent to the Bedhampton Roundabout, on Coverack Way adjacent to Junction 12 of the M27, on Northarbour Road adjacent to the A3 Southampton Road, and at Highbury College.

23.6.4.92. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at the majority of the receptors assessed for the DS1 scenario. For NO_2 a greater number of receptors are predicted to experience an improvement compared to those predicted to experience a deterioration, whilst for PM_{10} and $PM_{2.5}$ a greater number are predicted to experience a deterioration.

23.6.4.93. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.62.

Table 23.62 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for Verification Zone 6

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	**40.9**	31.0	15.8
	DS2 (2026) Maximum Modelled Concentration	**40.2**	31.0	15.8
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	1,857	71	6
	No Change in Concentration	2,584	4,184	4,437
	Deterioration in Concentration	32	218	30
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.9	-0.1	-0.1
	Maximum Deterioration	0.1	0.1	0.1

23.6.4.94. The summary results in Table 23.62 show an exceedance under the Do-Minimum scenario for NO_2. This is predicted to improve by 0.7µg/m^3 in the highest predicted concentration at receptors within Verification Zone 6 in the DS1 scenario. This is a slight beneficial impact using the IAQM descriptors, and should be read in conjunction with the information on verification and model error in Appendix 23.3 (Air Quality Traffic Modelling) taking into account that it was decided not to use the model correction factors in this zone due to a large increase in the model error. Figure 23.8 Sheet 6 should be compared with Figure 23.6 Sheet 6 for a comparison of the DM against the DS2 scenario. There is negligible improvement in the highest predicted concentrations for PM_{10} and no change for $PM_{2.5}$.

23.6.4.95. The highest predicted concentration of 40.2 µg/m³ for NO_2 under the DS2 scenario occurs at 83 residential receptors and one commercial receptor adjacent to the eastbound carriageway of the M27 in the Portsdown Hill and Paulsgrove areas. These same receptors are also predicted to experience the highest improvement of 0.9 µg/m³.

23.6.4.96. The highest predicted deterioration of 0.1 µg/m³ in concentrations of NO_2 occurs at locations adjacent to the Bedhampton Roundabout, on Coverack Way adjacent to Junction 12 of the M27, on Northarbour Road adjacent to the A3 Southampton Road, and at Highbury College.

23.6.4.97. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at the majority of the receptors assessed for the DS1 scenario. For NO_2 a greater number of receptors are predicted to experience an improvement compared to those predicted to experience a deterioration, whilst for PM_{10} and $PM_{2.5}$ a greater number are predicted to experience a deterioration.

23.6.4.98. NO_2 concentrations at a selection of representative receptors is shown in Table 23.63, consisting of high sensitivity receptors highlighted in Table 23.60, Figure 23.7 Sheet 6 and Figure 23.8 Sheet 6, and within 50 m of the road centreline, and those receptors predicted to experience the highest concentrations or largest changes (> ±0.2 µg/m³).

Table 2.63 - Verification Zone 6 Representative Receptor Selection

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
109 Browning Avenue, Portsmouth	39.5	38.9	-0.6	Moderate	38.9	-0.6	Moderate	No
Highbury College, Tudor Crescent, Portsmouth	38.9	38.8	-0.1	Slight	39.0	0.1	Slight	No
Flat 33, Graduate Court, Tudor Crescent, Portsmouth	38.0	37.8	-0.2	Slight	37.8	-0.2	Slight	No
37 Portsdown View, Havant	30.5	30.1	-0.4	Negligible	30.1	-0.4	Negligible	No
43 Coleridge Road, Portsmouth	39.5	38.9	-0.6	Moderate	38.9	-0.6	Moderate	No

Receptor	NO_2 Concentration (µg/m³)							In AQMA
	DM	DS1	DS1 Change	IAQM	DS2	DS2 Change	IAQM	
39 Falmouth Road, Portsmouth	39.5	38.9	-0.6	Moderate	38.9	-0.6	Moderate	No
1 Falmouth Road, Portsmouth	38.5	37.9	-0.6	Moderate	37.9	-0.6	Moderate	No
41 Tudor Crescent, Portsmouth	37.4	36.8	-0.6	Slight	36.7	-0.7	Slight	No
97 Hillsley Road, Portsmouth	40.9	40.2	-0.7	Moderate	40.2	-0.7	Moderate	No
19 Hillsley Road, Portsmouth	40.9	40.2	-0.7	Moderate	40.2	-0.7	Moderate	No
Flat 10, Oyster Quay, Port Way, Portsmouth	33.9	33.1	-0.8	Slight	33.2	-0.7	Slight	No
Flat 2, Oyster Quay, Port Way, Portsmouth	33.9	33.1	-0.8	Slight	33.2	-0.7	Slight	No
Flat 39, Oyster Quay, Port Way, Portsmouth	33.9	33.1	-0.8	Slight	33.2	-0.7	Slight	No

Verification Zone 6 Significance

23.6.4.99. The magnitude of effects according to the IAQM criteria at 4,125 out of 4,473 receptors in this zone is negligible for NO_2. Concentrations of NO_2 are predicted to improve at a greater number of receptors than for those predicted to experience a deterioration, however the opposite is true for PM_{10} and $PM_{2.5}$. At those receptors experiencing the highest modelled concentrations, the effects of predicted improvements at these locations is moderate according to the IAQM criteria. Therefore, the overall significance of the effects in verification zone 6 is assessed as **moderate beneficial**.

Air Quality Management Areas

AQMA Receptors

23.6.4.100. Within the City of Portsmouth, the combined number of impacted receptors affected by roads intersecting the city's AQMAs are shown in Table 23.64.

Table 23.64 - Impacted Receptors affected by AQMAs

Type	Receptor Count
Residential	14,515
Commercial	1,150
Community	89
Military	1
Total Number of Receptors	**15,755**

23.6.4.101. Within the numbers of receptors shown in Table 23.64, there are receptors with particular sensitivity, as shown in Table 23.65.

Table 23.65 - Particularly Sensitive Receptors affected by AQMAs

Sensitive Receptor	Receptor Count
Schools	37
Medical	17
Hospice	0
Sheltered Accommodation	1
Care Home	42

AQMA Results

23.6.4.102. During the construction stage a summary of the results for road closure and diversion traffic for the DS1 scenario are shown in Table 23.66.

Table 23.66 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 1 (2026) for AQMAs

		Construction Scenario DS1 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	39.7	23.0	14.0
	DS1 (2026) Maximum Modelled Concentration	39.2	23.0	14.1
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	3,514	1,662	325
	No Change in Concentration	8,267	11,038	15,022
	Deterioration in Concentration	3,974	3,055	408
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.8	-0.3	-0.1
	Maximum Deterioration	0.1	0.2	0.1

23.6.4.103. The summary results in Table 23.66 show that there is an improvement of 0.5 µg/m³ in the highest predicted concentration at receptors within Verification Zone 2 for NO_2 in the DS1 scenario. The maximum DS1 concentration of 39.2 µg/m³ is just under the objective. Figure 23.10 should be compared to Figure 23.9 for a comparison of the DM against the DS1 scenario. There is no change in the highest predicted concentrations for PM_{10}, and a negligible deterioration of 0.1 µg/m³ in the maximum predicted concentration of $PM_{2.5}$.

23.6.4.104. The highest predicted concentration of 39.2 µg/m³ for NO_2 under the DS1 scenario occurs at high occupancy residential receptors on Old Commercial Street and Grafton Street, closest to the M275.

23.6.4.105. The highest predicted deterioration of 0.1 µg/m³ in concentrations of NO_2 occurs at a total of 3,974 receptors within the area affected by AQMAs.

23.6.4.106. The highest predicted improvement of 0.8 µg/m³ in concentrations of NO_2 occurs at 31 high density residential receptors and one commercial receptor located north of the junction of Hayling Avenue and Eastern Road.

23.6.4.107. For NO_2, PM_{10} and $PM_{2.5}$, concentrations are not predicted to change at the majority of the receptors assessed for the DS1 scenario. For all modelled pollutants, more receptors are predicted to experience a deterioration than an improvement in pollutant concentrations. Overall, the level of maximum improvement is greater than the maximum deterioration, except for $PM_{2.5}$ where they are equal.

23.6.4.108. A summary of the results for diversions and road closures for the DS2 scenario are shown in Table 23.67.

Table 23.67 – Non-construction Related Traffic Assessment Results for the Do-Something Scenario 2 (2026) for AQMAs

		Construction Scenario DS2 2026		
Pollutant		**NO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual Mean Limit Value (µg/m³)		**40**	**40**	**25**
Number of properties greater than limit value	DM (2026) Maximum Modelled Concentration	39.7	23.0	14.0
	DS2 (2026) Maximum Modelled Concentration	39.2	23.0	14.1
	Removed Exceedances	0	0	0
	New Exceedances	0	0	0
Total Number of Properties	Improvement in Concentration	3,600	510	23
	No Change in Concentration	11,708	13,392	15,504
	Deterioration in Concentration	447	1853	228
Do Something-Do Minimum Annual Mean Change (µg/m³)	Maximum Improvement	-0.5	-0.1	-0.1
	Maximum Deterioration	0.1	0.1	0.1

23.6.4.109. The summary results in Table 23.67 show that there is an improvement of 0.5 µg/m^3 in the highest predicted concentration at receptors within Verification Zone 2 for NO_2 in the DS2 scenario. The maximum DS2 concentration of 39.2 µg/m^3 is just under the objective. Figure 23.11 should be compared to Figure 23.9. There is no change in the highest predicted concentrations for PM_{10}, and a negligible deterioration of 0.1 µg/m³ in the maximum predicted concentration of $PM_{2.5}$.

23.6.4.110. The highest predicted concentration of 39.2 µg/m³ for NO_2 under the DS2 scenario occurs at high occupancy residential receptors on Old Commercial Street and Grafton Street, closest to the M275.

23.6.4.111. The highest predicted deterioration of 0.1 µg/m³ in concentrations of NO_2 occurs at a total of 447 receptors within the area affected by AQMAs.

23.6.4.112. The highest predicted improvement of 0.5 µg/m³ in concentrations of NO_2 occurs at high occupancy residential receptors on Old Commercial Street and Grafton Street, closest to the M275, and at residential receptors located on Lower Derby Road and Stanley Road.

23.6.4.113. For all modelled pollutants, concentrations are not predicted to change at the vast majority of receptors assessed for the DS2 scenario. The maximum predicted improvement in concentrations of NO_2 is greater than the maximum predicted deterioration, however for particulate matter the maximum predicted deterioration and maximum predicted improvement are equal.

AQMA Significance

23.6.4.114. The magnitude of effects according to the IAQM criteria at 15,636 out of 15,755 receptors in this zone is negligible for NO_2. Concentrations of NO_2 are predicted to deteriorate at a greater number of receptors than for those predicted to experience a deterioration under the DS1 scenario, however the opposite is true for the DS2 scenario. At those receptors experiencing the highest modelled concentrations, the effects of predicted improvements at these locations is moderate according to the IAQM criteria. Therefore, the overall significance of the effects in verification zone 6 is assessed as **moderate beneficial**.

Significance

23.6.4.115. Both non-construction traffic scenarios have the potential to cause changes in local air quality which can impact high sensitivity receptors along the entire construction route. Most of the changes predicted are of a low magnitude in accordance with the classification matrix (Table 23.9).

23.6.4.116. A judgement of significance has been made for each verification zone based on the matrix shown in Table 23.9. Table 23.68 provides a summary of the key determinants in the judgement made for each verification zone which are based on NO_2 as the pollutant most likely to exceed the annual mean objective. This includes the Root Mean Square Error (RMSE) performance metric which is used to quantify the average error in the model prediction in each veririfcation zone. Further description of model performance metrics are provided in Appendix 23.3 (Air Quality Traffic Modelling).

Table 23.68 – Temporary Non-Construction Traffic Impact Significance Summary

Verification Zone	Maximum DM NO_2 conc. ($\mu g/m^3$)	Maximum DS NO_2 conc. ($\mu g/m^3$)	Scenario with more NO_2 improvements than deteriorations	Scenario with more NO_2 deteriorations than improvements	Exceedances	Model RMSE ($\mu g/m^3$)	Significance
1	39.7	39.2	DS2	DS1	None	6.88	Negligible beneficial
2	22.3	22.3	DS2	DS1	None	5.02	Negligible beneficial
3	24.2	24.3	None	DS1 DS2	None	1.59	Negligible adverse
4	31.6	31.4	None	DS1 DS2	None	7.36	Negligible adverse
5	30.3	30.7	None	DS1 DS2	None	8.55	Negligible adverse
6	40.9	40.2	DS1 DS2	None	DS1 DS2	5.36	Moderate beneficial
AQMA	39.7	39.2	DS2	DS1	None	6.88 5.02	Moderate beneficial

23.6.4.117. Table 23.68 shows that beneficial impacts are predicted in verification zones 1, 2, 6 and the AQMA. In these zones, improvements in the maximum NO_2 prediction and at the majority of the receptors are also predicted. However, the RMSE in these zones is higher than the recommended 10% of the annual mean objective and therefore exceedances at some modelled receptors in zones 1, 6 and the AQMA cannot be ruled out. Exceedances in verification zone 2 are unlikely as the RMSE (5.02 $\mu g/m^3$) is less than the headroom for the maximum prediction under the objective in this zone.

23.6.4.118. An adverse significance judgement is made in zones 3, 4 and 5. However, such is the extent of the RMSE and headroom for the maximum prediction under the objective in each zone, exceedances are unlikely.

23.6.4.119. Although no new exceedances of the objectives are predicted, such are the limitations in the modelling process, it cannot be determined with certainty that an exceedance of the NO_2 annual mean objective will not occur as a result of diverted traffic. Furthermore, the number of deteriorations predicted is generally greater than improvements in both scenarios in all of the verification zones even though in most cases these changes are very small and the impact is negligible. A large number of receptors are predicted to experience negligible changes following the IAQM criteria, however there are areas where moderate changes are predicted, such as within the AQMAs. Despite this, there is a level of error in the modelling results, discussed in Appendix 23.3 (Air Quality Traffic Modelling) that is considered to be large for all zones except 3.

23.6.4.120. Pertinent to the judgement of significance is the temporal nature of the road closures and traffic diversions. It is likely that these measures will be temporary and although the exact period of each measure cannot be determined, they are expected to last for less than one year and will not necessarily occur simultaneous in each zone. The traffic flows used to complete the predictive modelling have been applied on the assumption that these measures will be in place all year in each zone simultaneously. which represents a highly conservative and robust approach.

23.6.5. COMPLIANCE WITH DIRECTIVE 2008/50/EC

23.6.5.1. Due to the nature of the diversions, road closures and construction traffic operation, all of the predicted impacts are transitory in nature, and so are not predicted to impact on the ability of the Compliance Risk Road Network applicable to the Proposed Development to meet obligations under EU Directive 2008/50/EC.

23.6.5.2. There is however, an area within the City of Portsmouth where the roadside concentration is predicted to be above the limit value for NO_2 of 40 µg/m³. The predicted concentration for 2026 at the roundabout of A3, Hope Street and Commercial Road is predicted to be 45.8 µg/m³ under the Do-Minimum and DS1 scenarios, and 44.9 µg/m³ under the DS2 scenario. The predicted 2026 compliance concentration for this area, adjusted using the Defra Roadside NO_2 Projection Factors (Department for Environment, Food and Rural Affairs, 2019), is 31.6 µg/m³.

23.6.5.3. The A3 between the roundabout with Hope Street and Commercial Street, up to the junction with Princess Royal Road is predicted to experience concentrations between 36 µg/m³ and 39 µg/m³, suggesting exceedances of the limit value may be possible taking into account limitations and the error level in the modelling.

23.6.6. CONSTRUCTION STAGE LOCAL POWER GENERATION

23.6.6.1. A summary of the detailed data sheets for Construction Stage local power generation, resulting emissions calculations and assumptions is made to inform the quantitative assessment of these emissions is shown in Appendix 23.3 (Air Quality Traffic Modelling).

Embedded Mitigation

23.6.6.2. Mitigation is embedded in the Proposed Development design through the use of generators which conform to a minimum of EU Stage III emissions standards for non-road diesel engines.

Description of Works

23.6.6.3. Diesel will be the source of fuel burned in generators to provide power for the HDD installation activities described in Section 23.3.6. It has been confirmed by a representative HDD contractor that the shift pattern for construction activities will be 12 hours (0700-1900) working 5 days per week and on Saturdays between 08:00 to 13:00, with all HDD combustion sources operating accordingly (though this may differ in certain locations in accordance with the working hours described in Chapter 3 – Description of the Proposed Development (Document Reference: 6.1.3). Other assumptions made in the quantitative assessment are shown in Appendix 23.3 (Air Quality Traffic Modelling).

23.6.6.4. Exhaust gas pollutant concentrations were available from manufacturer specifications for the specified power generation equipment which is described in Appendix 23.3 (Air Quality Traffic Modelling). These pollutants are nitrogen oxides, carbon monoxide, particulate matter and total hydrocarbons. The following pollutants were modelled in the assessment:

- Nitrogen oxides (NO_x)
- Nitrogen dioxide (NO_2)

- Carbon monoxide (CO)
- Particulate matter (PM_{10})
- Total hydrocarbons (THC)

23.6.6.5. Sulphur Dioxide ($SO_{2)}$ is not assessed because ultra-low sulphur diesel will be used. Exhaust gas concentrations of general particulate matter were provided. Therefore, $PM_{2.5}$ is assumed to equal PM_{10} for comparison with the target value. This represents a conservative approach because as the exhaust gas concentration of the finer particle fraction $PM_{2.5}$ will be lower than PM_{10}. THC were modelled as benzene which represents a conservative approach because no objective or limit value exists for THC. Therefore, benzene was selected for modelling as a limit value is prescribed for this particular hydrocarbon pollutant as shown in Table 23-2 It should be noted however that the toxicity of benzene in air is of a different nature to THC, particularly as benzene is a documented carcinogen. Therefore, the equivalent level of carcinogenesis should not be inferred from the results presented here.

23.6.6.6. Pollutant concentrations have been predicted at the discrete receptors described in Appendix 23.3 (Air Quality Traffic Modelling). The relevant national air quality limits and objective values are prescribed in the national AQS as described in Table 23-2.

Impacts

Meteorological Sensitivity

23.6.6.7. To test the sensitivity of the predicted concentrations to variable dispersion conditions, five years of meteorological data were tested to identify which year provides the most conservative dispersion conditions. The results of the meteorological sensitivity testing are presented for five years of hourly sequential data (2014 – 2018) for the main pollutant of concern which is NO_x/NO_2.

23.6.6.8. The top 10 annual mean and 99.79th percentile of hourly NO_x concentrations, based on the discrete receptor results, are presented for each modelled year under the worst-case scenario emissions parameters in Table 23.69.

Table 23.69 – Meteorological sensitivity modelling results based on ground level receptor grid results under 'Worst-Case' scenario emissions parameters

Ranked Value	NO_x concentration (µg/m^3)									
	2014		2015		2016		2017		2018	
	Annual	Hourly*	Annual	Hourly*	Annual	Hourly*	Annual	Hourly*	Annual	Hourly*
1	5.3	84.8	3.2	72.1	4.3	72.3	3.8	80.5	3.3	72.6
2	5.3	84.8	3.2	70.8	4.2	72.3	3.8	80.5	3.3	72.6
3	4.6	81.6	2.8	70.8	4.2	72.2	3.3	69.8	3.0	68.4
4	4.6	77.2	2.7	69.5	4.1	70.4	3.3	69.8	3.0	66.5
5	4.2	74.9	2.7	69.2	4.1	70.2	2.9	67.7	2.9	64.8
6	4.2	74.9	2.6	65.8	4.0	66.0	2.9	62.8	2.9	64.6
7	4.1	73.7	2.6	64.0	4.0	63.8	2.5	61.7	2.8	63.6
8	4.1	73.6	2.6	61.7	3.7	63.8	2.5	61.7	2.8	62.9
9	4.0	70.8	2.6	61.0	3.7	63.2	2.3	60.5	2.6	62.9
10	4.0	70.2	2.6	61.0	3.6	63.0	2.3	58.1	2.6	62.1

**** 99.79th percentile of hourly means.***

23.6.6.9. A review of the results in Table 23.59 for the top 10 ranked discrete receptors in each year shows that most of the highest annual mean and all of the 99.79th percentile hourly mean NO_x concentrations occur in 2014, thus demonstrating that this year yields the most conservative dispersion conditions of the years tested.

23.6.6.10. As such, hourly sequential data for 2014 from the Thorney Island meteorological station were used within all subsequent model scenario runs.

Impact Assessment

23.6.6.11. The results of the dispersion modelling are presented in tabular format for the likely Construction Stage scenario. Impacts are considered on human receptors as identified by the discrete receptor locations included in the model which are shown in Appendix 23.3 (Air Quality Traffic Modelling).

23.6.6.12. A summary of the predicted annual and short-term NO_2, CO, THC, PM_{10} and $PM_{2.5}$ results at the modelled discrete receptors are presented in Table 23.70, Table 23.71 and Table 23.72 show the maximum predicted concentration for each pollutant and averaging period and an interpretation of the magnitude of impact following the IAQM Planning guidance.

Table 23.70 – Do-Something Scenario results for modelled receptors (annual average)

Statistic	NO_2	THC	PM_{10}	$PM_{2.5}$**
Maximum Annual Mean PC (µg/m^3)	5.3	0.2	0.4	0.4
Maximum Annual Mean PEC (*PC* + *Background*) (µg/m^3)	17.3	0.6	14.0	11
AQAL (µg/m^3)	40	5*	40	25***
Change relative to AQAL (%)	13%	5%	1%	2%
IAQM impact magnitude	Moderate	Negligible	Negligible	Negligible

**** Annual average AQLA for benzene***

***** The exhaust gas concentrations provided by generator manufacturers did not differentiate between PM_{10} and $PM_{2.5}$. PM results are therefore assessed against the PM_{10} and $PM_{2.5}$ objectives.***

****** Target value***

23.6.6.13. Table 23.71 shows that the annual average objectives for NO_2, THC, PM_{10} and $PM_{2.5}$ will not be exceeded during construction at any of the sensitive receptors. The largest predicted increase relative to the AQAL is 13 % for NO_2 and the largest receptor concentration inclusive of background will be 17.3 µg/m^3 for NO_2. Although this is a **moderate** impact in accordance with the IAQM criteria, it is 43 % of the annual mean objective.

Table 23.71 – Do-Something Scenario results for modelled receptors (24-hour PM_{10} and max 8-hour CO)

Statistic (PC and PEC as µg/m^3)	CO	PM_{10}
Max. Percentile PC (*90.4th daily PM_{10} and max daily 8-hour running mean CO*)	5.0	1.8
Exceedance days	-	0
AQAL	10,000	50
IAQM impact magnitude	Negligible	Negligible

23.6.6.14. Table 23.71 shows that the highest 8-hour running mean CO concentration is 5.0 µg/m^3 which is less than 1% of the AQLA. The 90.4th percentile daily mean PM_{10} concentration is predicted to be 1.8 µg/m^3 which is **negligible** in comparison to the AQAL.

Table 23.72 – Do-Something Scenario results for top 10 modelled receptors (1-hour NO_2)

Statistic (µg/m³)	1	2	3	4	5	6	7	8	9	10
X	467836	467836	467810	467804	467834	467834	467853	467799	467866	467844
Y	99194	99194	99175	99173	99199	99199	99072	99172	99068	99075
Max. Percentile PC (*99.79th hourly NO_2*)	84.8	84.8	81.6	77.2	74.9	74.9	73.7	73.6	70.8	70.2
AQAL (µg/m³)	200	200	200	200	200	200	200	200	200	200
Change relative to AQAL (%)	42	42	41	39	37	37	37	37	35	35
IAQM impact magnitude	**Moderate**									

23.6.6.15. Table 23-72 shows that the highest 1-hour NO_2 concentration is 84.8 µg/m³ which is 42 % of the AQAL. The top ten 1-hour NO_2 concentrations range from 35-42 % of the AQAL. These are **moderate** impacts in accordance with the IAQM criteria.

Significance

23.6.6.16. The IAQM impact assessment process provides impact descriptor guidance to inform the significance judgement which varies depending on the pollutant and averaging period assessed. Negligible impacts are predicted for THC, PM_{10} and $PM_{2.5}$ and moderate impacts for both annual average and 1-hour NO_2 in accordance with the IAQM criteria. However, the predicted maximum annual average NO_2 concentration is under half of the objective and exceedances of the 1-hour objective are unlikely even assuming conservative operating hours and the temporary nature of the works as described in Section 23.4.7.

23.6.6.17. Therefore, the effect of changes in local air quality as a result of Construction Stage local power generation is assessed as a **minor adverse** significant effect.

23.6.7. OPERATIONAL STAGE BACK-UP POWER GENERATION

Embedded Mitigation

23.6.7.1. Due to detailed emissions information not being available, the emissions from the EU Stage VI Q emissions standards were used (applicable for diesel generators new on the market from 2014), as shown in Table 23.6. As a new generator installation after the construction year of 2026, the generator will be required to meet this standard at a minimum, barring the introduction of further, more stringent emissions standards during the intervening period.

Description of Works

23.6.7.2. Diesel will be the source of fuel burned in generators to provide back-up power for the landfall activities described in Section 23.3.6. Other assumptions made in the quantitative assessment are shown in Appendix 23.3 (Air Quality Traffic Modelling).

23.6.7.3. The pollutants considered in the quantitative assessment of local air quality are those for which exhaust gas concentrations were available from manufacturer specifications which are shown in Appendix 23.3 (Air Quality Traffic Modelling). These are the same as those for the Construction Stage local power generation assessment.

Impacts

Meteorological Sensitivity

23.6.7.4. To test the sensitivity of the predicted concentrations to variable dispersion conditions, five years of meteorological data were tested to identify which year provides the most conservative dispersion conditions. The results of the meteorological sensitivity testing are presented for five years of hourly sequential data (2014 – 2018) for the main pollutant of concern which is NO_x/NO_2.

23.6.7.5. Table 23.73 shows the top 10 annual mean and 99.79th percentile of hourly NO_x concentrations, based on the discrete receptor results, are presented for each modelled year under the worst-case scenario emissions parameters.

Table 23.73 – Meteorological sensitivity modelling results based on ground level receptor grid results under 'Worst-Case' scenario emissions parameters

Ranked Value	NO_x concentration (µg/m^3)									
	2014		2015		2016		2017		2018	
	Annual	Hourly*	Annual	Hourly*	Annual	Hourly*	Annual	Hourly*	Annual	Hourly*
1	1.8	9.3	1.7	9.6	1.6	9.4	1.6	9.5	1.7	9.4
2	1.7	8.9	1.7	8.8	1.5	8.9	1.6	9.1	1.6	9.0
3	1.7	8.8	1.5	8.6	1.5	8.7	1.6	8.6	1.6	9.0
4	1.6	8.7	1.4	8.6	1.5	8.7	1.4	8.4	1.6	8.8
5	1.5	8.6	1.4	8.4	1.5	8.5	1.3	8.3	1.6	8.7
6	1.5	8.4	1.3	8.3	1.3	8.4	1.3	8.3	1.4	8.5
7	1.4	8.3	1.3	8.3	1.3	8.3	1.2	7.9	1.4	8.0
8	1.4	8.1	1.3	7.8	1.3	7.7	1.2	7.7	1.4	8.0
9	1.4	7.8	1.2	7.8	1.2	7.7	1.2	7.6	1.4	7.7
10	1.4	7.8	1.2	7.8	1.2	7.5	1.0	7.6	1.3	7.7

**** 99.79th percentile of hourly means.***

23.6.7.6. A review of the results for the top 10 ranked discrete receptors in each year shows that most of the highest annual mean and all of the 99.79th percentile hourly mean NO_x concentrations occur in 2014, thus demonstrating that this year yields the most conservative dispersion conditions of the years tested.

23.6.7.7. As such, hourly sequential data for 2014 from the Thorney Island meteorological station were used within all subsequent model scenario runs.

Impact Assessment

23.6.7.8. The results of the dispersion modelling are presented in tabular format for the likely Construction Stage scenario. Impacts are considered on human receptors as identified by the discrete receptor locations included in the model which are shown in Appendix 23.2 (IAQM Construction Assessment).

23.6.7.9. A summary of the predicted annual and short-term NO_2, CO, THC, PM_{10} and $PM_{2.5}$ results at the modelled discrete receptors are presented in Table 23.74, Table 23.75, Table 23.76 and Table 23.78 show the maximum predicted concentration for each pollutant and averaging period and an interpretation of the magnitude of impact following the IAQM Planning guidance.

Table 23.74 – Do-Something Scenario results for modelled receptors (annual average)

Statistic	NO_2	THC	PM_{10}	$PM_{2.5}$**
Maximum Annual Mean PC (µg/m^3)	1.8	1.2	0.2	0.2
Maximum Annual Mean PEC (*PC* + *Background*) (µg/m^3)	13.8	1.6	13.7	10
AQAL (µg/m^3)	40	5*	40	25***
Change relative to AQAL (%)	4%	24%	0.4%	1%
IAQM impact magnitude	Negligible	Moderate	Negligible	Negligible

**** Annual average AQLA for benzene***

***** The exhaust gas concentrations provided by generator manufacturers did not differentiate between PM_{10} and $PM_{2.5}$. PM results are therefore assessed against the PM_{10} and $PM_{2.5}$ objectives.***

****** Target value***

23.6.7.10. Table 23.74 shows that the annual average objectives for NO_2, THC, PM_{10} and $PM_{2.5}$ will not be exceeded during construction at any of the sensitive receptors. The largest predicted increase relative to the AQAL is 24 % for THC and 4 % for NO_2. The largest receptor concentration inclusive of background will be 13.8 µg/m^3 for NO_2. Although this is a **moderate** impact for THC in accordance with the IAQM criteria, it is just 24 % of the annual mean objective and no exceedances are likely.

Table 23.75 – Do-Something Scenario results for modelled receptors (24-hour PM_{10} and max 8-hour CO)

Statistic (PC and PEC as µg/m^3)	CO	PM_{10}
Max. Percentile PC (*90.4th daily PM_{10} and max daily 8-hour running mean CO*)	22.1	0.5
Exceedance days	-	0
AQAL	10,000	50
IAQM impact magnitude	Negligible	Negligible

23.6.7.11. Table 23.75 shows that the highest 8-hour running mean CO concentration is 22.1 µg/m^3 which is less than 1 % of the AQLA. The 90.4th percentile daily mean PM_{10} concentration is predicted to be 0.5 µg/m^3 which is **negligible** in comparison to the AQAL.

Table 23.76 – Do-Something Scenario results for top 10 worst affected modelled receptors (1-hour NO_2)

Statistic (µg/m^3)	1	2	3	4	5	6	7	8	9	10
X	467810	467804	467797	467799	467805	467786	467815	467792	467836	467836
Y	99175	99173	99089	99172	99086	99093	99083	99171	99194	99194
Max. Percentile PC (*99.79th hourly NO_2*)	9.3	8.9	8.8	8.7	8.6	8.4	8.3	8.1	7.8	7.8
AQAL (µg/m^3)	200	200	200	200	200	200	200	200	200	200
Change relative to AQAL (%)	5	4	4	4	4	4	4	4	4	4
IAQM impact magnitude	Negligible									

23.6.7.12. Table 23.76 shows that the highest 1-hour NO_2 concentration is 9.3 µg/m^3 which is 5 % of the AQAL. The top ten 1-hour NO_2 concentrations range from 3.9-5 % of the AQAL. These are **negligible** impacts in accordance with the IAQM criteria.

23.6.7.13. Table 23.77 shows the results of ground level NO_x predictions made at transect receptors in the Langstone Harbour SSSI, Chichester and Langstone Harbours SPA and RAMSAR, and the Solent Marine SAC in Sections 7, 8, 9 and 10. The transect receptors are identified in Figure 23.5

Table 23.77 – Transect annual average NO_x prediction results

ID	NO_x (annual PC)	NO_x (Defra background)	NO_x (PEC)	% change	IAQM impact
SSSI1_0	0.11	15.95	16.05	0.69	Negligible
SSSI1_10	0.10	15.95	16.05	0.62	Negligible
SSSI1_20	0.09	15.95	16.04	0.56	Negligible
SSSI1_30	0.09	15.95	16.04	0.56	Negligible
SSSI1_40	0.08	15.95	16.03	0.5	Negligible
SSSI1_50	0.08	15.95	16.03	0.5	Negligible
SSSI1_60	0.08	15.95	16.02	0.5	Negligible
SSSI1_70	0.07	15.95	16.02	0.44	Negligible
SSSI1_80	0.07	15.95	16.01	0.44	Negligible
SSSI1_90	0.06	15.95	16.01	0.37	Negligible
SSSI1_100	0.06	15.95	16.01	0.37	Negligible
SSSI1_110	0.06	15.95	16.00	0.38	Negligible
SSSI1_120	0.05	15.95	16.00	0.31	Negligible
SSSI1_130	0.05	15.95	16.00	0.31	Negligible
SSSI1_140	0.05	15.95	16.00	0.31	Negligible
SSSI1_150	0.05	15.95	15.99	0.31	Negligible
SSSI1_160	0.04	15.95	15.99	0.25	Negligible
SSSI1_170	0.04	15.95	15.99	0.25	Negligible
SSSI1_180	0.04	15.95	15.99	0.25	Negligible
SSSI1_190	0.04	15.95	15.99	0.25	Negligible

SSSI1_200	0.04	15.95	15.98	0.25	Negligible
SSSI2_0	0.04	13.81	13.85	0.29	Negligible
SSSI2_10	0.04	13.81	13.85	0.29	Negligible
SSSI2_20	0.04	13.81	13.85	0.29	Negligible
SSSI2_30	0.04	13.81	13.85	0.29	Negligible
SSSI2_40	0.04	13.81	13.85	0.29	Negligible
SSSI2_50	0.04	13.81	13.85	0.29	Negligible
SSSI2_60	0.03	13.81	13.85	0.22	Negligible
SSSI2_70	0.03	13.81	13.85	0.22	Negligible
SSSI2_80	0.03	13.81	13.85	0.22	Negligible
SSSI2_90	0.03	13.81	13.85	0.22	Negligible
SSSI2_100	0.03	13.81	13.85	0.22	Negligible
SSSI2_110	0.03	13.81	13.85	0.22	Negligible
SSSI2_120	0.03	13.81	13.84	0.22	Negligible
SSSI2_130	0.03	13.81	13.84	0.22	Negligible
SSSI2_140	0.03	13.81	13.84	0.22	Negligible
SSSI2_150	0.03	13.81	13.84	0.22	Negligible
SSSI2_160	0.03	13.81	13.84	0.22	Negligible
SSSI2_170	0.03	13.81	13.84	0.22	Negligible
SSSI2_180	0.03	13.81	13.84	0.22	Negligible
SSSI2_190	0.03	13.81	13.84	0.22	Negligible
SSSI2_200	0.03	13.81	13.84	0.22	Negligible

23.6.7.14. Table 23.77 shows that all transect receptor predictions of ground level NO_x concentrations are less than the 30 µg/m^3 objective set for the protection of vegetation and ecosystems.

23.6.7.15. As the annual mean objective is not exceeded at any of the transect receptors, and the emissions from the ORS back-up generators will not cause an increase in NO_x concentration of more than 1% of the annual mean objective, the designated sites are screened out of further assessment in accordance with the Environment Agency's risk assessment guidance .

Significance

23.6.7.16. Following the IAQM impact assessment criteria, negligible impacts are predicted for NO_2, PM_{10} and $PM_{2.5}$ and moderate for THC. All the predicted maximum annual average concentrations are under half of the objective and exceedances of any of the objectives are highly unlikely even assuming conservative operating hours for the back-up generators as described in Section 23.4.7.

23.6.7.17. Therefore, the effect of changes in local air quality as a result of Construction Stage local power generation is assessed as **negligible adverse** significant.

23.6.8. PREDICTED IMPACTS SUMMARY

Construction Stage

Construction Site Activities

23.6.8.1. The overall dust risk for each Sections within the Onshore Cable Corridor is summarised in Table 23.78.

Table 23.78 – Summary of the Overall Dust Risk Construction Site Activity

Section	Overall Dust Risk
1 Lovedean (Converter Station Area)	High
2 Anmore	High
3 Denmead/Kings Pond Meadow	High
4 Hambledon Road to Farlington Avenue	High
5 Farlington	High
6 Zetland Field to Sainsbury's Car Park	High
7 Farlington Junction to Airport Service Road	High
8 Eastern Road (adjacent to Great Salterns Golf Course) to Moorings Way	High
9 Moorings Way to Bransbury Road	Medium
10 Eastney (Landfall)	Medium

23.6.8.2. The overall dust risk for the Proposed Development during the Construction Stage can be classified as High driven by the magnitude of the works and number of potential exposures in each section. However, these effects will be temporary and transient and with the implementation of appropriate mitigation for each Section, the impacts during the Construction Stage are assessed as **not significant**.

Generated Construction Traffic

23.6.8.3. Both construction traffic scenarios have the potential to cause changes in local air quality which can impact high sensitivity receptors along the entire construction route. However, as more improvements in pollutant concentrations than deteriorations are predicted and no objective exceedances are likely, the effect of generated construction traffic on local air quality is assessed as **negligible beneficial significant**.

Non-Construction Related Traffic

23.6.8.4. Both non-construction traffic scenarios have the potential to cause changes in local air quality which can impact high sensitivity receptors along the entire construction route. Most of the changes predicted are of a low magnitude and impacts range from negligible adverse to moderate beneficial along the route. In consideration of the conservative assumptions used in the assessment, model performance and the existence of some predictions over the limit value for NO_2, the effect of non-construction traffic is assessed as **negligible adverse** to **moderate beneficial significant**.

Construction Stage Local Power Generation

23.6.8.5. For construction stage local power generation emissions associated with onshore cable laying activities, negligible and moderate local air quality impacts are predicted. However, the predicted maximum annual average concentrations are under half of the objective and exceedances of the short-term objective are unlikely even assuming conservative operating hours and the temporary nature of the works. Therefore, the effect of changes in local air quality as a result of construction stage local power generation is assessed as **minor adverse significant**.

Operational Stage

23.6.8.6. With the implementation of embedded mitigation for the ORS building back-up generators at the Eastney Landfall, the impact during the operation on local air quality is assessed as **negligible adverse significant**.

Decommissioning Stage

23.6.8.7. Decommissioning is anticipated to involve works of a similar nature to the installation, therefore the impacts for each stage of decommissioning work are expected to be the same as for construction. It is not anticipated that receptor numbers will change in magnitude so as to change the overall impact assessments for each assessment.

23.7. CUMULATIVE EFFECTS

23.7.1. CONSTRUCTION STAGE

Cumulative Effects

23.7.1.1. A review of the planning portals for Portsmouth City Council, Havant Borough, Council, Winchester City Council, East Hampshire District Council and Hampshire County Council has identified several planning applications for which there is potential for the release of air emissions during construction at the same time as the Proposed Development. These applications are shown in Appendix 23.5 (Air Quality Cumulative Effect Assessment Matrix (Stage 1 & 2) and Appendix 23.6 (Air Quality Cumulative Effect Assessment Matrix (Stage 3 & 4) of the ES Volume 3 (document reference 6.3.23.5).

23.7.1.2. Particular attention should be paid to the development at the Grainger Development Site under application numbers APP/10/00828 and 10/02862/OUT, and also the development phases of the Berewood development (under multiple separate application numbers) as these may overlap temporally with the Proposed Development, and are of a scale where the cumulative effects of construction dust and trackout may warrant consideration. Consultation with the relevant developers should be undertaken according to the construction dust effects mitigation table in the CEMP.

23.7.1.3. At this stage of the development design, it is not possible to determine precisely when emissions will occur in each construction corridor section during the Construction Stage. Therefore, the occurrence or otherwise, of cumulative Construction Stage emissions cannot be determined. However, the nature of the proposed and embedded mitigation measures described provides the following opportunities:

- Fugitive emissions of dust and exhaust gases from the site have been assessed for the Onshore Cable Corridor, and in all instances the risk of adverse amenity and health impacts is considered to be low in the presence of appropriate mitigation described in Appendix 23.2 (IAQM Construction Assessment). Where the potential for cumulative effects can be identified, scope exists to increase the intensity of mitigation at the Proposed Development construction corridor section site and impose commensurate mitigation on other development sites, as required.
- Actioning the Framework TMS will require the prediction of traffic disruption which will be planned in conjunction with Hampshire County Council. This provides the opportunity to take a holistic approach to traffic management, to minimise disruption from simultaneous construction projects to minimise the effect cumulative emissions on local air quality.

23.7.2. OPERATIONAL STAGE

Cumulative Effects

23.7.2.1. No cumulative effects have identified for the Operational Stage.

23.7.3. DECOMMISSIONING STAGE

23.7.3.1. No cumulative effects identified for the Decommissioning Stage.

23.8. PROPOSED MITIGATION AND ENHANCEMENT

23.8.1.1. Proposed dust risk specific mitigation for construction activities in each Section is given in Appendix 23.2 (IAQM Construction Assessment) and incorporated into the Onshore Outline CEMP.

23.9. RESIDUAL EFFECTS

23.9.1.1. Table 23.79 provides a summary of the findings of the assessment.

Table 23.79 – Summary of Effects Table for Air Quality

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Construction Stage				
Construction site activities	Local human receptors as described in Figure 23.2	Medium - / T / D / ST	As described in Appendix 23.2 (IAQM Construction Assessment) and in the Onshore Outline CEMP.	Negligible - / T / D / ST
Generated construction traffic	Local human receptors along construction traffic routes	Negligible + / T / D / ST	As per mitigation described in the Onshore Outline CEMP and Framework CTMP.	Negligible + / T / D / ST
Non-construction related traffic (verification zone 1)	Local human receptors as described in Figure 23.6	Negligible + / T / D / ST	As per mitigation described in the Framework CTMP.	Negligible + / T / D / ST

Non-construction related traffic (verification zone 2)	Local human receptors as described in Figure 23.6	Negligible + / T / D / ST	As per mitigation described in the Framework CTMP.	Negligible + / T / D / ST
Non-construction related traffic (verification zone 3)	Local human receptors as described in Figure 23.6	Negligible - / T / D / ST	As per mitigation described in the Framework CTMP.	Negligible - / T / D / ST
Non-construction related traffic (verification zone 4)	Local human receptors as described in Figure 23.6	Negligible - / T / D / ST	As per mitigation described in the Framework CTMP.	Negligible - / T / D / ST
Non-construction related traffic (verification zone 5)	Local human receptors as described in Figure 23.6	Negligible - / T / D / ST	As per mitigation described in the Framework CTMP.	Negligible - / T / D / ST
Non-construction related traffic (verification zone 6)	Local human receptors as described in Figure 23.6	Moderate + / T / D / ST	As per mitigation described in the Framework CTMP.	Moderate + / T / D / ST
AQMAs	Local human receptors as	Moderate + / T / D / ST	As per mitigation described in the Framework CTMP.	Moderate + / T / D / ST

	described in Figure 23.9			
Construction Stage local power generation	Local human receptors along the entire Onshore Cable Corridor	Minor - / T / D / ST	As per mitigation described in the CEMP and Appendix 23.2 (IAQM Construction Assessment).	Minor - / T / D / ST
Operational Stage				
Back-up power generation for the landfall FOC buildings	Local human receptors as described in Figure 23.5	Negligible - / P / D / LT	None required	Negligible - / P / D / LT

Key to table:

+ / - = Beneficial or Adverse P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

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