7.0 Air Quality

7.1 Introduction

This Chapter describes the potential air quality effects associated with the proposed development, a full description of which is set out in *Chapter 4*. The assessment has been carried out by Air Quality Consultants Ltd (AQC).

This Chapter was reviewed by Penny Wilson, a Technical Director at AQC with more than 20 years' relevant experience in the field of air quality. This Chapter was written by Faye Wilder, an Assistant Consultant at AQC with over one year of experience in delivering air quality assessments and was co-written by Julia Burnell, a Principal Consultant at AQC with nine years' experience in delivering air quality assessments and Imogen Heard, an Associate of AQC with more 12 years' experience in the field of air quality.

Further details of the experience of the consultants who have undertaken the assessment is provided in *Appendix 7.1*.

Baseline local air quality conditions (2023) are described, together with the predicted air quality in the future assuming the proposed development does or does not proceed. The assessment of traffic-related impacts focuses on 2029, which is the earliest year of first occupation of the proposed development. The assessment of construction dust risk impacts focuses on the anticipated duration of the works.

This report has been prepared taking into account all relevant and local and national guidance and regulations.

This Chapter includes the following figures and appendices:

Figures	**Title**
Figure 7.1	Modelled Receptors
Figure 7.2	Study Area
Figure 7.3	Local Authority Monitoring Locations
Appendices	**Title**
Appendix 7.1	Professional Experience
Appendix 7.2	Legislative and Planning Policy Context
Appendix 7.3	Construction Dust Assessment Procedure and Impact Assessment
Appendix 7.4	EPUK & IAQM Planning for Air Quality Guidance
Appendix 7.5	Modelling Methodology
Appendix 7.6	Construction Mitigation
Appendix 7.7	References

7.2 Scoping, Consultation and Overview of Potential Effects

No scoping or consultation has been undertaken in relation to the assessment of air-quality related effects.

The proposed development will lead to an increase in traffic on the local roads, which may lead to adverse air quality effects at sensitive receptors. New residential properties within the proposed development may also be subject to the impacts of road traffic emissions from the

adjacent road network. The main air pollutants of concern related to traffic emissions are nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$).

The potential for the construction activities to adversely affect existing properties has also been assessed, both as a result of increases in traffic on the local roads and construction dust generated as a result of construction activities. The main pollutants of concern related to construction traffic are NO_2, PM_{10} and $PM_{2.5}$ while the main pollutant from construction activities are dust and PM_{10}.

Emissions from construction plant (Non-Road Mobile Machinery (NRMM)) will not be assessed, as guidance from the IAQM states that "*experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) […] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed*". Significant effects as a result of NRMM emissions can thus be discounted. However, suitable mitigation measures for site plant will be presented as part of the mitigation measures in *Appendix 7.6* based on advice presented in the IAQM guidance document.

7.3 Assessment Methodology

7.3.1 Legislative and Policy Framework

The policy context for air quality is set out in *Appendix 7.2*.

7.3.2 Assessment Criteria

The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups. The 'objectives' set out the extent to which the Government expects the standards to be achieved taking account of practical considerations. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations[1] and the Air Quality (England) (Amendment) Regulations[2].

The UK-wide objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour mean NO_2 objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3 [3]. Therefore, 1-hour NO_2 concentrations will only be considered if the annual mean concentration is above this level. Measurements have also shown that the 24-hour mean PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3[3] The predicted annual mean PM_{10} concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM_{10} objective. Where predicted annual mean concentrations are below 32 µg/m^3 it is unlikely that the 24-hour mean objective will be exceeded.

[1] HMSO (2000) The Air Quality (England) Regulations 2000 Statutory Instrument 928

[2] HMSO (2002) The Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043

[3] Defra (2025) Review & Assessment: Technical Guidance LAQM.TG22 May 2025 Version. Available at: https://laqm.defra.gov.uk/wp-content/uploads/2021/03/LAQM-TG22-May-25-v2.1.pdf

The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance[3]. The annual mean objectives for NO_2 and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for NO_2 applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.

For $PM_{2.5}$, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value (see later in this section), originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

Defra has also set two targets for $PM_{2.5}$ concentrations in England. One target focuses on absolute concentrations, with the long-term target to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by the end of 2040 (referred to as the annual mean concentration target or AMCT). The second target relates to reducing overall population exposure to $PM_{2.5}$. By the end of 2040, overall population exposure to $PM_{2.5}$ should be reduced by 35% compared with 2018 levels (referred to as the population exposure reduction target or PERT). The most recent interim targets published in the 2025 Environmental Improvement Plan[4] aim to meet the AMCT 10 years early, by December 2030, with the interim PERT being a reduction of 30% by December 2030 (*Table 7.1*).

Table 7.1 - Environment Act $PM_{2.5}$ Targets

Metric	Target	Target Year
AMCT	Interim target: 10 µg/m^3	2030
	Legally binding target: 10 µg/m^3	2040
PERT	Interim target: 30% reduction in exposure compared to 2018	2030
	Legally binding target: 35% reduction in exposure compared to 2018	2040

In 2024 Defra published Interim Planning Guidance on the $PM_{2.5}$ targets[5]. This states that:

"The purpose of the targets is to improve air quality by reducing levels of $PM_{2.5}$ across the country, therefore improving public health. While achievement of the targets will be assessed at relevant monitoring sites, the targets apply to ambient (outdoor) air throughout England. Applicants and Local Planning Authorities should therefore consider the impact of developments on air quality in all ambient air, whether a monitor is present or not."

In order to address the new targets, it is not sufficient to assess solely whether a scheme is likely to lead to an exceedance of a legal limit. Instead, developments need to implement appropriate mitigation measures from the design stage, ensuring the minimum amount of pollution is emitted and that exposure is minimised.

[4] Defra (2025) Environmental Improvement Plan 2025 https://www.gov.uk/government/publications/environmental-improvement-plan-2025/environmental-improvement-plan-eip-2025

[5] Defra (2024) $PM_{2.5}$ Targets: Interim Planning Guidance. Available at: https://uk-air.defra.gov.uk/pm25targets/planning

Pending publication of the new guidance, Defra advises applicants to provide evidence that they have identified key sources of air pollution within the scheme and taken appropriate action to minimise emissions of $PM_{2.5}$ and its precursors as far as possible. More detailed assessment is expected for development closer to populations and/or having higher emissions. Defra has posed two questions to be used as prompts to support the interim assessment process:

"How has exposure to $PM_{2.5}$ been considered when selecting the development site?; and

What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors?"

EU Directive 2008/50/EC[6] sets limit values for NO_2, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations[7, 8]. The limit values for NO_2 and PM_{10} are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

The relevant air quality criteria for this assessment are provided in *Table 7.2.*

Table 7.2 - Air Quality Criteria for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Value
NO_2	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m$_3$ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3 [a]
$PM_{2.5}$	Annual Mean	20 µg/m^3 [b]

[a] A proxy value of 32 µg/m^3 as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM_{10} objective are possible[16].

[b] There is no numerical $PM_{2.5}$ objective for local authorities. Convention is to assess against the UK limit value which is currently 20 µg/m^3.

[6] The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council.

[7] HMSO (2010) The Air Quality Standards Regulations 2010 Statutory Instrument 1001.

[8] As amended through the Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

Construction Dust Criteria

There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM[9] has been used. Full details of this approach are provided in *Appendix 7.3*.

Road Traffic Screening Criteria

Environmental Protection UK (EPUK) and the IAQM recommend a two-stage screening approach to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts[10]. The approach, as described in *Appendix 7.4*, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m^2 of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in *Appendix 7.4*) inside an AQMA are a change in flows of more than 25 heavy duty vehicles (HDVs) or 100 light duty vehicles (LDVs) per day; outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that "*the criteria provided are precautionary and should be treated as indicative*", and "*it may be appropriate to amend them on the basis of professional judgement*".

While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also sometimes be used to identify the extent of the road network that requires assessment. Where the change in traffic on a given road link is less than the relevant screening threshold, it is unlikely that a significant impact would occur, and these links can be disregarded unless there are additional development-related emissions affecting receptors along the link.

7.3.3 Existing Conditions

Existing sources of emissions within the study area have been defined using a number of approaches. Industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register[11]. Local sources have also been identified through examination of Havant Borough Council's (HBC) Air Quality Annual Status Report (ASR)[12].

Information on existing air quality has been obtained by collating the results of monitoring carried out by the Local Authority. The background concentrations across the study area have

[9] IAQM (2024) Guidance on the Assessment of Dust from Enabling works and Construction v2.2, Available: http://iaqm.co.uk/guidance/

[10] Moorcroft and Barrowcliffe et al (2017) Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London, Available: http://iaqm.co.uk/guidance/.

[11] Defra (2025) UK Pollutant Release and Transfer Register. Available at: http://prtr.defra.gov.uk/map-search

[12] Havant Borough Council (2025) 2025 Air Quality Annual Status Report (ASR)

been defined using Defra's 2021-based background maps[13]. These cover the whole of the UK on a 1x1 km grid. The background annual mean nitrogen dioxide maps have been calibrated against concurrent measurements[14]. The calibration factor has also been applied to future year backgrounds. Mapped background concentrations of PM_{10} and $PM_{2.5}$ have not been adjusted.

Whether or not there are any exceedances of the annual mean limit value for NO_2 in the study area has been identified using the maps of roadside concentrations published by Defra[15, 16]. These maps are used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to report exceedances of the limit value. The national maps of roadside PM_{10} and $PM_{2.5}$ concentrations[16], which are available for the years up to 2023, show no exceedances of the limit values anywhere in the UK in 2023.

7.3.4 Construction Impacts

The construction dust assessment considers the potential for impacts within 250 m of the site boundary, or within 50 m of roads used by construction vehicles. The assessment methodology is that provided by the IAQM[17]. This follows a sequence of steps:

- Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required;
- Step 2 consists of determining the risk of dust impacts for each activity (i.e., demolition, earthworks, construction and the trackout of material from the site onto the local road network):
    - Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. The 'dust emission magnitude' is determined for each of the four activities listed above, and is defined as 'small', 'medium' or 'large';
    - Step 2b defines the sensitivity of the area to dust soiling and human health effects and is determined based on the number of receptors located within certain distances from the site, and their sensitivity. Area sensitivities are defined for each type of effect (dust soiling or human health) and are described as 'low', 'medium' or 'high'; and
    - Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Risks are defined as 'negligible', 'low', 'medium' or 'high'.
- Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there would be no significant effects.

Appendix 7.3 explains the approach in more detail.

[13] Defra (2025) Local Air Quality Management (LAQM) Support Website. Available at: http://laqm.defra.gov.uk/

[14] https://www.aqconsultants.co.uk/resources

[15] Defra (2020) 2020 NO_2 projections data (2018 reference year).

[16] Defra (2025) UK Ambient Air Quality Interactive Map. Available at: https://uk-air.defra.gov.uk/data/gis-mapping

[17] IAQM (2024) Guidance on the Assessment of Dust from Demolition and Construction v2.2. Available at: http://iaqm.co.uk/guidance/

7.3.5 Road Traffic Impacts

Modelling Methodology

Concentrations have been predicted using the ADMS-Roads dispersion model, with vehicle emissions derived using Defra's Emissions Factors Toolkit (EFT) (v13.1)[13]. Details of the model inputs and the model verification are provided in *Appendix 7.5*.

Sensitive Locations

Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted at a number of locations both within, and close to, the proposed development (including receptors within nearby consented schemes). Receptors have been identified to represent worst-case exposure within these locations, this being the façades of the properties closest to the road network. When selecting these receptors, particular attention has been paid to assessing impacts close to junctions, where traffic may become congested, and where there is a combined effect of several road links.

Twenty-one existing residential properties have been identified as receptors for the assessment. Five receptor locations have been identified within the proposed development and an additional five locations have been selected as receptors within nearby consented schemes. These locations are described in *Table 7.3* and are shown in *Figure 7.1*. In addition, concentrations have been modelled at HBC diffusion tube monitoring sites '4', '22', '28', and '31' within the study area, in order to verify the modelled results (see *Appendix 7.5* for verification method).

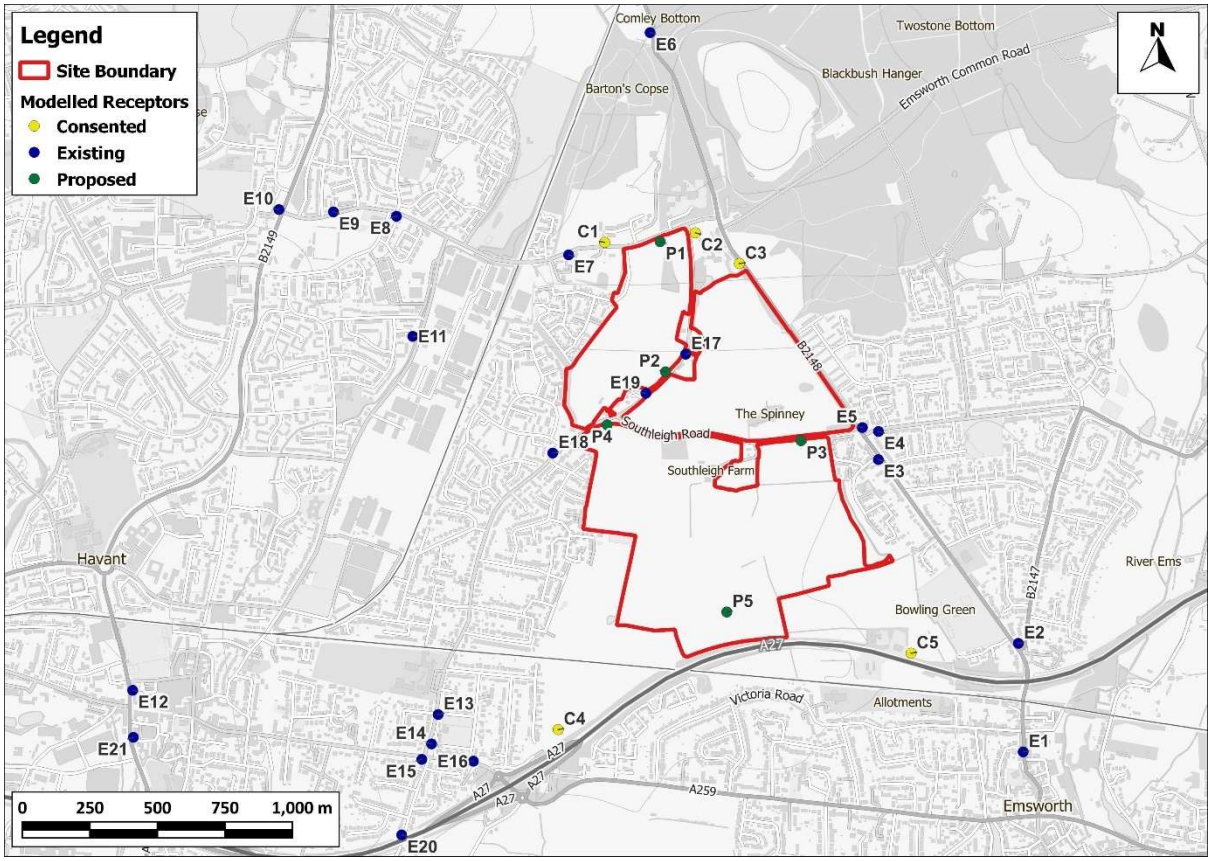

Figure 7.1 - Modelled Receptors

Table 7.3 - Description of Receptor Locations				
Receptor	**Type**	**X coordinate**	**Y coordinate**	**Heights Modelled (m)[a]**
Existing properties				
E1	Residential	474869	106131	1.5
E2	Residential	474851	106532	1.5
E3	Residential	474333	107211	1.5
E4	Residential	474333	107315	1.5
E5	Residential	474274	107330	1.5
E6	Residential	473488	108789	1.5
E7	Residential	473187	107967	1.5
E8	Residential	472550	108110	1.5
E9	Residential	472317	108126	1.5
E10	Residential	472115	108135	1.5
E11	Residential	472610	107666	1.5
E12	Residential	471573	106359	4.5
E13	Residential	472704	106270	1.5
E14	Residential	472680	106161	1.5
E15	Residential	472643	106104	1.5
E16	Residential	472834	106097	1.5
E17	Residential	473620	107601	1.5
E18	Residential	473128	107236	1.5
E19	Residential	473473	107456	1.5
E20	Residential	472569	105825	1.5
E21	Residential	471576	106185	4.5
Consented properties				
C1	Residential	473320	108014	1.5
C2	Residential	473656	108049	1.5
C3	Residential	473819	107935	1.5
C4	Residential	473148	106214	1.5
C5	Residential	474454	106496	1.5
New properties				
P1	Residential	473525	108016	1.5
P2	Residential	473545	107536	1.5
P3	Residential	474047	107281	1.5
P4	Residential	473329	107339	1.5
P5	Residential	473772	106648	1.5

[a] A height of 1.5m is used to represent ground-floor level exposure. A height of 4.5 m is used to represent first-floor level exposure.

Assessment Scenarios

NO_2, PM_{10} and $PM_{2.5}$ concentrations have been predicted for the following scenarios:

- base year 2023;
- the future assessment year (2029; the earliest year of occupation of the proposed development) without the proposed development (hereafter referred to as 'Without Scheme' scenario); and
- 2029 with the proposed development (hereafter referred to as 'With Scheme' scenario). This is assumed to have over-estimated the impact of the development as it is not expected to be completed until 2038.

The traffic flows associated with consented developments are included within both the future 'Without Scheme' and 'With Scheme' scenarios.

"With Scheme" predictions for 2029 are based on all properties being fully occupied in the opening year, although the proposed development is unlikely to be completed until 2038. This approach ensures that a worst-case assessment is carried out which combines the maximum traffic impact of the development, with opening year pollutant concentrations and vehicle emissions. By the year of completion, 2038, pollutant concentrations are anticipated to be lower than 2028 due to reductions in emissions from vehicles and other sources, and thus impacts will be smaller than presented in this assessment.

Assumptions included within the modelling are set out in *Appendix 7.5*.

Impact Description

The approach developed jointly by EPUK and the IAQM[11] has been used. The approach describes impacts at individual receptors based on the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective. *Table 7.4* sets out the method for determining the impact descriptor for annual mean concentrations at individual receptors, having been adapted from the table presented in the guidance document. For the assessment criterion the term Air Quality Assessment Level (AQAL) has been adopted as it covers all pollutants, i.e. those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 7.4 - Air Quality Impact Descriptors for Individual Receptors for All Pollutants [a]

Long-Term Average Concentration At Receptor In Assessment Year [b]	**Change in concentration relative to AQAL [c]**				
	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Negligible	Negligible	Negligible	Minor (Slight)	Moderate
76-94% of AQAL	Negligible	Negligible	Minor (Slight)	Moderate	Moderate
95-102% of AQAL	Negligible	Minor (Slight)	Moderate	Moderate	Substantial
103-109% of AQAL	Negligible	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Negligible	Moderate	Substantial	Substantial	Substantial

[a] Values are rounded to the nearest whole number.

[b] This is the "Without Development" concentration where there is a decrease in pollutant concentration and the "With Development" concentration where there is an increase.

[c] AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.

[d] Minor is used as Standard EIA terminology and corresponds to Slight in relevant guidance.

Limitations to the Assessment

There are many components that contribute to the uncertainty of modelling predictions. The road traffic emissions dispersion model used in this assessment is dependent upon the traffic data that have been input, which will have inherent uncertainties associated with them. There

are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms.

An important stage in the process is model verification, which involves comparing the model output with measured concentrations (see *Appendix 7.5*). Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2023) concentrations.

Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. For obvious reasons, the model cannot be verified in the future, and it is necessary to rely on a series of projections provided by Department for Transport (DfT) and Defra as to what will happen to traffic volumes, background pollutant concentrations and vehicle emissions. Historic versions of Defra's EFT tended to over-state emissions reductions into the future. However, analyses of the more recent versions of Defra's EFT carried out by AQC[18, 19] suggest that, on balance, these versions are unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by previous versions of the EFT, especially against a base year of 2016 or later. Whilst such an analysis has not been undertaken by AQC for EFT v13.1, it is considered that using EFT v13.1 for future-year forecasts in this report provides a robust assessment, given that the model has been verified against measurements made in 2023.

Forecasts of future-year concentrations are usually based on measurements made during a recent year. They then take account of projected changes over time to factors such as the composition of the vehicle fleet and the uptake of other new technologies, as well as population increases etc. In early 2020, activity in the UK was disrupted by the Covid-19 pandemic. As a result, concentrations of traffic-related air pollutants fell appreciably in the short term[20]. Forecasts in this assessment have been based on post-pandemic years and are therefore considered to be representative of the 'new normal'.

7.3.6 Assessment of Significance

Construction Dust Significance

Guidance from IAQM[9] is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment thus focuses on determining the appropriate level of mitigation to ensure that effects will normally be 'not significant', which to provide consistency throughout the EIA are described as 'negligible'. Construction phase effects are temporary.

Occupation Phase Significance

There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and IAQM[10] has therefore been used. The overall significance of the air quality impacts is determined using professional judgement, taking account of the impact descriptors in *Table 7.4*; the experience

[18] AQC (2020) Performance of Defra's Emission Factor Toolkit 2013-2019.

[19] AQC (2020) Comparison of EFT v10 with EFT v9.

[20] Defra Air Quality Expert Group (2020) Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK- Rapid evidence review.

of the consultants preparing the Chapter is set out in *Appendix 7.1*. Full details of the EPUK/IAQM approach are provided in *Appendix 7.4.*

It is important to differentiate between the terms impact and effect with respect to the assessment of air quality. The term impact is used to describe a change in pollutant concentration at a specific location. The term effect is used to describe an environmental response resulting from an impact, or series of impacts. Within this Chapter, the air quality assessment has used published guidance and criteria described in the following sections to determine the likely air quality impacts at a number of sensitive locations. The potential significance of effects has then been determined by professional judgement, based on the frequency, duration and magnitude of predicted impacts and their relationship to appropriate air quality objectives.

Geographic Extent of Effect

The study area for the assessment has been identified using professional judgement, focussing on the areas where impacts are anticipated to be greatest. Specifically, the assessment includes the roads nearest the development which will experience the greatest increase in traffic (Southleigh Road, Horndean Road, the A27, Bartons Road and Eastleigh Road), extending south along the B2148 and the B2147 towards Emsworth, and west towards Emsworth Road, New Lane and the B2149. The assessment has also considered Park Road South in Havant where existing pollutant concentrations are higher. The study area is shown in *Figure 7.2*.

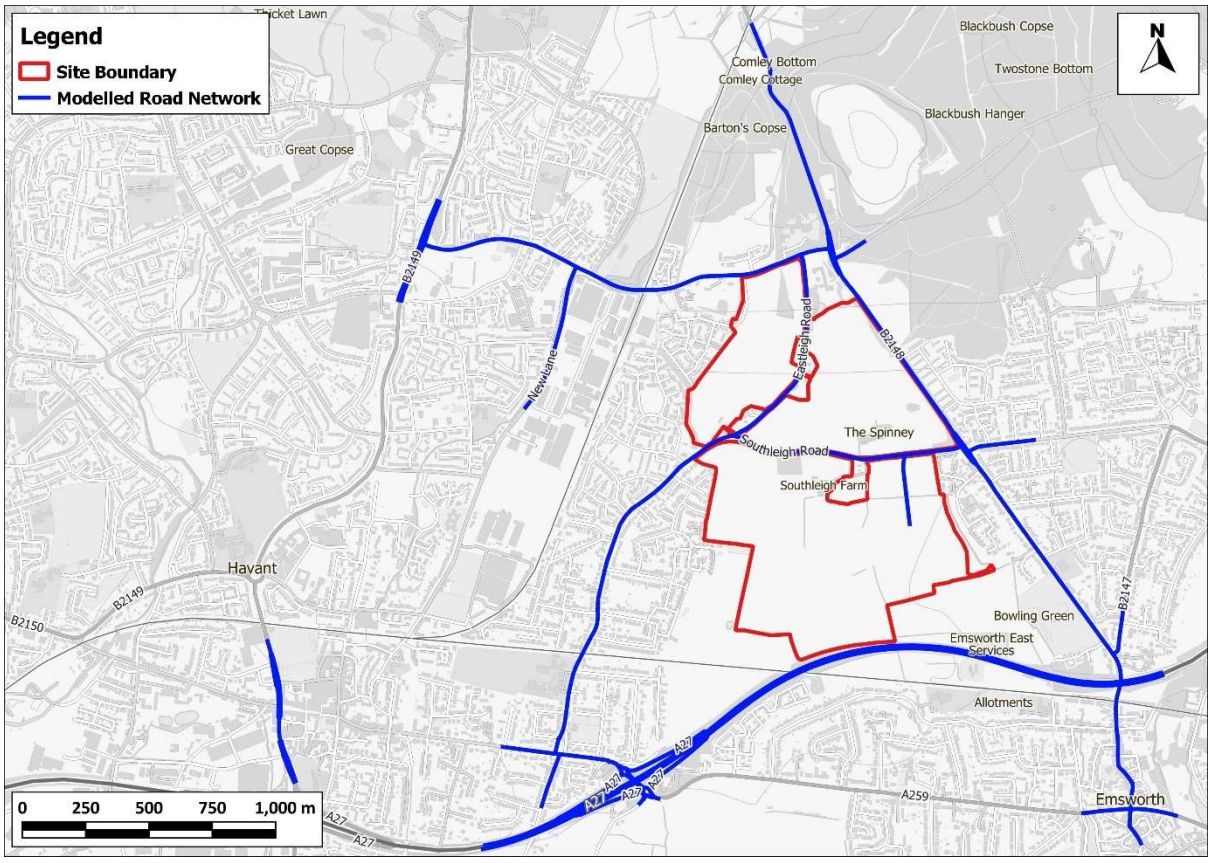

Figure 7.2 – Study Area

The site suitability has been considered based on a review of local monitoring data, detailed modelling and a comparison with the air quality strategy objectives. The geographic extent is based on where within the proposed development future sensitive receptors may be located.

Effect Duration

The effects of the proposed development, once occupied, are considered to be 'permanent'.

Direct and Indirect Effects

The effects of the traffic emissions generated by the proposed development, and the effects of existing air pollution sources on future users and residents of the proposed development, are considered to be 'direct'.

Receptor Sensitivity

The 2007 Air Quality Strategy[21] explains that air quality standards and objectives were determined based on expert recommendations and represent *"levels at which no significant health effects would be expected in the population as a whole"*. The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in LAQM.TG22[3].

In this Chapter, all receptors where the air quality objectives apply are considered to be of high sensitivity. Locations where the objectives do not apply must be considered as not sensitive, therefore there are no medium or low sensitivity receptors within the context of the occupation-phase impact assessment.

7.4 Baseline Conditions

7.4.1 Relevant Features

The proposed development is located to the east of the town of Havant, within the administrative boundary of HBC. The site is bounded by Bartons Road to the north, the B2148 to the east, and the A27 to the south. Southleigh Road and Eastleigh Road pass through the application site, dividing the proposed development into three separate plots. The site currently mostly comprises agricultural land and grassland, with small areas of woodland. Southleigh Farm is located within the southernmost plot.

The nearest AQMA is located approximately 8.1 km to the southwest of the proposed development on a section of the A2030 Eastern Road and the A288 in Portsmouth. This AQMA (Portsmouth AQMA No.9) was declared by Portsmouth City Council (PCC) for exceedances of the annual mean NO_2 objective.

[21] Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

7.4.2 Industrial Sources

A search of the UK Pollutant Release and Transfer Register[12] has not identified any significant industrial or waste management sources that are likely to affect the proposed development, in terms of air quality.

7.4.3 Local Air Quality Monitoring

HBC does not operate any automatic monitors within its administrative area. However, HBC does operate a number of NO_2 monitoring sites using diffusion tubes prepared and analysed by Gradko International Ltd (using the 20% TEA in water method), four of which are within the study area for the assessment, and two of which are within 700 m of the proposed development.

Annual mean results for diffusion tubes in the study area for the years 2020 to 2024 are summarised in *Table 7.5*. The monitoring site locations are shown in *Figure 7.3*. The monitoring data have been taken from HBC's 2025 ASR[12].

While 2020 and 2021 results have been presented for completeness, they will not be relied upon in any way as they are not representative of 'typical' air quality conditions due to the impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

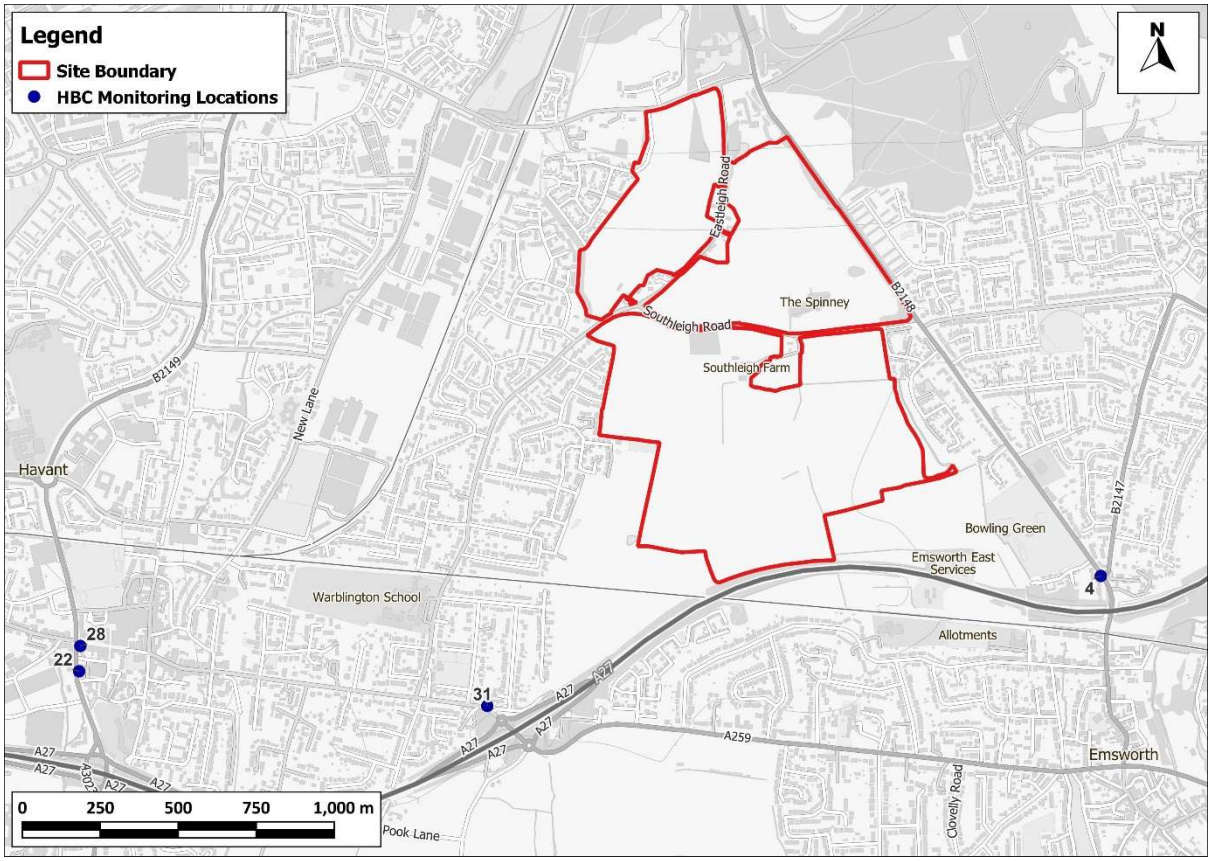

Figure 7.3 - Local Authority Monitoring Locations

Table 7.5 - Summary of Annual Mean NO_2 Monitoring (2020-2024) (µg/m^3)

Site ID	Site Type	Location	2020	2021	2022	2023	2024
4	Suburban	Emsworth (A27)	14.4	15.4	15.4	15.5	13.2
31	Roadside	Emsworth Road (North)	23.4	25.5	21.4	20.9	19.3
22	Roadside	Park Road South (Bulbeck Junction)	23.7	25.9	26.7	25.4	23.3
28	Roadside	Park Road South	25.1	28.6	28.9	28.0	26.0

As shown in *Table 7.5*, measured concentrations have been below the annual mean NO_2 objective between 2020 and 2024 for all monitoring sites within the study area. There is a downward trend in concentrations at all presented monitoring sites.

Furthermore, as the monitored annual mean concentrations are below 60 µg/m^3, it is unlikely that the 1-hour mean NO_2 objective will have been exceeded.

HBC does not undertake PM_{10} and $PM_{2.5}$ monitoring.

7.4.4 Exceedances of Limit Value

Defra has not identified any exceedances of the annual mean or 1-hour mean limit values in 2023 in HBC's area[22]. As such, there is not considered to be a risk of a limit value exceedance in the vicinity of the proposed development by the time that it is occupied.

As discussed, in *Paragraph 7.2.29* in *Appendix 7.2*, Defra has produced an Air Quality Action Plan (AQAP)[23] to tackle roadside NO_2 concentrations in the UK. Within this Plan, HBC is identified as having limit value exceedances in or beyond 2017, but not beyond 2020, thus the Plan does not require the authority to undertake any further actions. However, a High Court judgement[24] declared the Plan unlawful with regard to its application to the 45 local authority areas in which exceedances were projected beyond 2017, but not beyond 2020. The judgement required the 33 local authorities where exceedances were projected beyond 2018 to "*develop and implement a plan designed to deliver compliance in the shortest time possible*"; HBC is not one of these authorities, having no projected exceedances beyond 2018, thus it is not required to produce a plan.

7.4.5 Background Concentrations

Estimated background concentrations in the study area, which have been derived from the Defra background maps[15], are set out in *Table 7.6* and are all well below the respective objectives. A range of values is presented as the study area covers multiple 1x1km grid squares.

[22] Defra (2025). UK Air Compliance Data. Available at: https://uk-air.defra.gov.uk/compliance-data

[23] Defra (2017) Air quality plan for nitrogen dioxide (NO_2) in the UK.

[24] Royal Courts of Justice (2018). Judgement on Case No. CO/4922/2017.

Table 7.6 - Estimated Annual Mean Background Pollutant Concentrations in 2023 and 2029 (µg/m^3)			
Year	**NO_2**	**PM_{10}**	**$PM_{2.5}$**
2023	11.7 – 15.0	11.1 – 13.0	7.0 – 8.0
2029	8.7 – 11.6	10.7 – 12.5	6.7 – 7.5
Objective/AMCT	**40**	**40**	**20 [a]/10 [b]**

[a] The 20 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

[b] To be met by 2040.

7.4.6 Baseline Dispersion Model Results

Baseline concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been modelled at each of the existing receptor locations (see *Figure 7.1* and *Table 7.3* for receptor locations). The results, which cover both the existing (2023) and future year (2029) baseline (Without Scheme), are set out in *Table 7.7* for NO_2 and *Table 7.8* for PM_{10} and $PM_{2.5}$. The modelled road components of nitrogen oxides have been adjusted from those predicted by the model based on a comparison with local measurements (see *Appendix 7.5* for the verification methodology).

Table 7.7 - Modelled Annual Mean Baseline Concentrations of NO_2 (µg/m^3) at Existing and Consented Receptors			
Receptor	**Type**	**2023**	**2029 Without Scheme**
E1	Residential	16.8	11.7
E2	Residential	16.6	11.6
E3	Residential	13.6	9.8
E4	Residential	14.5	10.4
E5	Residential	14.5	10.3
E6	Residential	13.8	10.7
E7	Residential	15.7	11.4
E8	Residential	14.8	10.7
E9	Residential	15.2	10.9
E10	Residential	14.4	10.4
E11	Residential	15.4	11.9
E12	Residential	23.6	16.1
E13	Residential	17.8	13.1
E14	Residential	18.0	13.2
E15	Residential	19.8	14.2
E16	Residential	19.7	14.2
E17	Residential	14.6	10.8
E18	Residential	14.1	10.4
E19	Residential	13.7	10.2
E20	Residential	21.5	14.7
E21	Residential	22.8	15.7
C1	Residential	[a]	11.2
C2	Residential	[a]	11.4
C3	Residential	[a]	10.9
C4	Residential	[a]	11.3
C5	Residential	[a]	13.4
Objective		**40**	

[a] Receptors located within consented schemes were not present in 2023, therefore concentrations have not been presented.

Table 7.8: Modelled Annual Mean Baseline Concentrations of PM_{10} and $PM_{2.5}$ (µg/m^3) at Existing and Consented Receptors					
Receptor	**Type**	**PM_{10}**		**$PM_{2.5}$**	
		2023	**2029 Without Scheme**	**2023**	**2029 Without Scheme**
E1	Residential	13.5	12.9	8.4	7.9
E2	Residential	13.3	12.8	8.3	7.8
E3	Residential	11.9	11.4	7.5	7.0
E4	Residential	12.1	11.6	7.6	7.1
E5	Residential	12.1	11.6	7.6	7.1
E6	Residential	11.2	10.9	7.1	6.8
E7	Residential	12.5	12.0	7.6	7.2
E8	Residential	12.3	11.7	7.9	7.4
E9	Residential	12.3	11.8	8.0	7.5
E10	Residential	12.1	11.6	7.9	7.4
E11	Residential	12.3	11.8	8.1	7.6
E12	Residential	12.5	12.0	8.0	7.5
E13	Residential	12.5	12.0	8.0	7.5
E14	Residential	12.5	11.9	8.0	7.5
E15	Residential	12.8	12.2	8.1	7.6
E16	Residential	12.8	12.3	8.2	7.7
E17	Residential	12.3	11.8	7.5	7.0
E18	Residential	12.2	11.7	7.5	7.0
E19	Residential	12.1	11.6	7.4	6.9
E20	Residential	12.8	12.3	7.7	7.2
E21	Residential	12.5	12.0	8.0	7.5
C1	Residential	[a]	11.1	[a]	6.9
C2	Residential	[a]	11.1	[a]	6.9
C3	Residential	[a]	11.6	[a]	7.0
C4	Residential	[a]	12.7	[a]	7.0
C5	Residential	[a]	12.8	[a]	7.8
Objective		**32 [b]**		**20 [c]**	
AMCT		**-**		**10 [d]**	

[a] Receptors located within consented schemes were not present in 2023, therefore concentrations have not been presented.

[b] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22[16]. A value of 32 µg/m^3 is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance[10]

[c] The 20 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

[d] To be met by 2040.

The predicted annual mean concentrations of NO_2 are all below the air quality objective in 2023 and 2029 at all modelled receptors. The annual mean concentrations are also well below 60 µg/m^3 at every receptor in both 2023 and 2029; it is, therefore, unlikely that the 1-hour mean NO_2 objective will be exceeded.

The predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ are all well below the respective air quality objectives in both 2023 and 2029 at all modelled receptors. The annual mean PM_{10} concentrations are also below 32 µg/m^3 and it is, therefore, unlikely that the 24-hour mean PM_{10} objective will be exceeded. In addition, the $PM_{2.5}$ concentrations are also below the legally binding AMCT target of 10 µg/m^3, to be achieved by 2040.

7.5 Embedded and Standard Mitigation Measures

7.5.1 Embedded Mitigation Measures

Construction Phase

The risk of effects from construction dust will be limited to the areas where dust generating activities are taking place, and only for the duration of the construction phase.

The retention of vegetation at the site boundary will provide a barrier against dust dispersion from the site.

Occupation Phase

Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation.

The layout of the proposed development has been designed to help reduce the number of car journeys and associated transport emissions through the provision of new pedestrian and cycling connections, and the provision of a mobility hub which will include bus stops, cycle parking, and car club spaces. Additionally, the provision of a primary school, early years provision and services within the Local Centre as part of the proposed development will reduce the need to travel by car.

7.5.2 Standard Mitigation Measures

Construction Phase

A comprehensive list of mitigation measures to be implemented during the construction work period is included within the Framework Construction Environmental Management Plan (CEMP) in *Appendix 4.1*. Measures to minimise dust and PM_{10} emissions have been identified based on the risk, as set out below.

Occupation Phase

Measures and initiatives to be implemented during the occupation of the proposed development to promote sustainable transport modes are set out in the Travel Plan to be submitted as part of the planning application.

7.6 Assessment of Environmental Impacts

This section sets out the potential effects of the development on the basis of the assessment parameters plans and assumes the inclusion of embedded mitigation as set out in the preceding section.

7.6.1 Impact Assessment

Construction Phase

Construction Dust

The construction works will give rise to a risk of dust effects during earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. These are various sensitive receptors that may be affected by dust, including residential properties.

The results of the construction dust risk assessment, presented in *Appendix 7.3*, for each of the construction phases are shown in *Table 7.9*.

Table 7.9 - Summary of Risk of Impacts during Construction Without Mitigation

Source	Dust Soiling	Human Health
Demolition	Medium Risk	Low Risk
Earthworks	High Risk	Medium Risk
Construction	High Risk	Medium Risk
Trackout	Medium Risk	Low Risk

The assessment of the impacts during the construction phase (see *Appendix 7.3*) has been used to determine the level of Standard Mitigation necessary to ensure that the air quality effects will be not significant. Overall, the effects during construction (with the recommended mitigation in place) are judged to be not significant, i.e., **negligible** (in line with the terminology used in this ES).

Construction Traffic

Typical traffic volumes generated by the site during the construction works will be below the relevant screening criteria of 100 AADT for heavy vehicles and 500 AADT for light vehicles recommended by EPUK/IAQM guidance[11]. It is, therefore, not considered necessary to assess the impacts of traffic emissions during the construction phase and it can be concluded that the proposed development will not have a significant impact on local roadside air quality as a result of construction traffic emissions.

Table 7.10 – Summary of Impact Assessment – Construction Phase						
Receptor	**Sensitivity/ Importance/Value**	**Description of Impact**	**Embedded & Standard Mitigation Measures**	**Nature of Effect**	**Type of Effect**	**Significance of Effect**
Existing and Consented Human Health Receptors	High	Construction Dust	CEMP (see *Section 7.5* and *Appendix 7.6*)	Adverse[a]	Temporary, Medium-term, Direct	Not Significant (Negligible)
		Road Traffic Emissions	CLP (see *Section 7.5* and *Appendix 7.6*)	Negligible	Temporary, Medium-term, Direct	Not Significant (Negligible)

[a] The scale of impacts at individual receptor locations was not determined for construction. A qualitative assessment was undertaken, and it is considered that with the application of recommended mitigation measures, residual effects will be 'not significant' (negligible).

Occupation Phase

Impacts at Existing Receptors

The proposed development will generate traffic volumes that exceed the EPUK/IAQM screening thresholds on a number of roads along the local road network and, therefore, an assessment is required.

Nitrogen Dioxide

Predicted annual mean concentrations of NO_2 in 2029 for existing and consented scheme receptors are set out in *Table 7.11* for both the 'Without Scheme' and 'With Scheme' scenarios. The impact at each receptor is also described using the impact descriptors given in *Table 7.11*.

Table 7.11 - Predicted Impacts on Annual Mean NO_2 Concentrations in 2029 (µg/m^3)

Receptor	Type	Without Scheme	With Scheme	% Change [a]	Impact Descriptor
E1	Residential	11.7	11.9	0	Negligible
E2	Residential	11.6	11.7	0	Negligible
E3	Residential	9.8	9.9	0	Negligible
E4	Residential	10.4	10.5	0	Negligible
E5	Residential	10.3	10.5	0	Negligible
E6	Residential	10.7	10.7	0	Negligible
E7	Residential	11.4	11.9	1	Negligible
E8	Residential	10.7	10.9	1	Negligible
E9	Residential	10.9	11.2	1	Negligible
E10	Residential	10.4	10.5	0	Negligible
E11	Residential	11.9	12.0	0	Negligible
E12	Residential	16.1	16.3	1	Negligible
E13	Residential	13.1	13.4	1	Negligible
E14	Residential	13.2	13.4	1	Negligible
E15	Residential	14.2	14.4	1	Negligible
E16	Residential	14.2	14.4	1	Negligible
E17	Residential	10.8	11.4	2	Negligible
E18	Residential	10.4	10.7	1	Negligible
E19	Residential	10.2	10.5	1	Negligible
E20	Residential	14.7	14.8	0	Negligible
E21	Residential	15.7	15.9	1	Negligible
C1	Residential	11.2	11.5	1	Negligible
C2	Residential	11.4	11.7	1	Negligible
C3	Residential	10.9	11.0	0	Negligible
C4	Residential	11.3	11.3	0	Negligible
C5	Residential	13.4	13.5	0	Negligible
Objective		**40**		**-**	**-**

[a] % changes are relative to the objective and have been rounded to the nearest whole number.

As shown in **Table 7.11**, the annual mean NO_2 concentrations are well below the objective at all modelled receptors, for both the 'Without Scheme' and 'With Scheme' scenarios. Furthermore, as the annual mean concentrations are below 60 µg/m^3, it is unlikely that the 1-hour mean NO_2 objective will be exceeded.

The percentage changes in concentrations, relative to the air quality objective (when rounded), range from 0% to 2%. Using the matrix in *Table 7.2*, these impacts are described as **negligible**.

PM_{10} and $PM_{2.5}$

Predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ in 2029 for existing and cumulative scheme receptors are set out in *Table 7.12* for both the "Without Scheme" and "With Scheme" scenarios. The impact at each receptor is also described using the impact descriptors given in *Table 7.12*.

Table 7.12 - Predicted Impacts on Annual Mean PM_{10} and $PM_{2.5}$ Concentrations in 2029 (µg/m³)

Receptor	Type	Annual Mean PM_{10} (µg/m³)				Annual Mean $PM_{2.5}$ (µg/m³)			
		Without Scheme	With Scheme	% Change	Impact Descriptor	Without Scheme	With Scheme	% Change	Impact Descriptor
E1	Residential	12.9	13.0	0	Negligible	7.9	7.9	0	Negligible
E2	Residential	12.8	12.8	0	Negligible	7.8	7.8	0	Negligible
E3	Residential	11.4	11.4	0	Negligible	7.0	7.0	0	Negligible
E4	Residential	11.6	11.6	0	Negligible	7.1	7.1	0	Negligible
E5	Residential	11.6	11.7	0	Negligible	7.1	7.2	0	Negligible
E6	Residential	10.9	10.9	0	Negligible	6.8	6.8	0	Negligible
E7	Residential	12.0	12.2	1	Negligible	7.2	7.3	0	Negligible
E8	Residential	11.7	11.8	0	Negligible	7.4	7.5	0	Negligible
E9	Residential	11.8	11.9	0	Negligible	7.5	7.5	0	Negligible
E10	Residential	11.6	11.6	0	Negligible	7.4	7.4	0	Negligible
E11	Residential	11.8	11.8	0	Negligible	7.6	7.6	0	Negligible
E12	Residential	12.0	12.0	0	Negligible	7.5	7.5	0	Negligible
E13	Residential	12.0	12.1	0	Negligible	7.5	7.6	0	Negligible
E14	Residential	11.9	12.0	0	Negligible	7.5	7.5	0	Negligible
E15	Residential	12.2	12.3	0	Negligible	7.6	7.7	0	Negligible
E16	Residential	12.3	12.4	0	Negligible	7.7	7.7	0	Negligible
E17	Residential	11.8	12.0	1	Negligible	7.0	7.1	1	Negligible
E18	Residential	11.7	11.8	0	Negligible	7.0	7.0	0	Negligible
E19	Residential	11.6	11.7	0	Negligible	6.9	7.0	0	Negligible
E20	Residential	12.3	12.4	0	Negligible	7.2	7.2	0	Negligible
E21	Residential	12.0	12.0	0	Negligible	7.5	7.5	0	Negligible
C1	Residential	11.1	11.2	0	Negligible	6.9	6.9	0	Negligible
C2	Residential	11.1	11.2	0	Negligible	6.9	6.9	0	Negligible
C3	Residential	11.6	11.6	0	Negligible	7.0	7.0	0	Negligible
C4	Residential	12.7	12.7	0	Negligible	7.0	7.0	0	Negligible
C5	Residential	12.8	12.8	0	Negligible	7.8	7.9	0	Negligible
Objective		**32** [b]		-	-	**20** [c]		-	-
AMCT		-		-	-	**10** [d]		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.

[b] While the annual mean PM_{10} objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22[16]. A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK/IAQM guidance[10].

[c] The $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

[d] To be met by 2040.

As shown in *Table 7.12*, the annual mean PM_{10} and $PM_{2.5}$ concentrations are well below the respective objectives. Furthermore, as the annual mean PM_{10} concentrations are below 32 µg/m^3, it is unlikely that the 24-hour mean PM_{10} objective will be exceeded. The AMCT target will also be achieved.

The changes in concentrations range from 0% to 1% (when rounded) for both PM_{10} and $PM_{2.5}$ concentrations, and all impacts are thus described as **negligible**.

Impacts on Future Residents of the Proposed Development

Predicted air quality conditions for future residents of the proposed development, taking account of emissions from the adjacent road network, are set out in *Table 7.13* for Receptors P1 to P5 (see *Table 7.3* and *Figure 7.1* for receptor locations).

Table 7.13 – Predicted Annual Mean Concentrations of NO_2, PM_{10} and $PM_{2.5}$ in 2029 for New Receptors in the Proposed Development (µg/m^3)

Receptor	NO_2	PM_{10}	$PM_{2.5}$
P1	11.5	11.2	6.9
P2	10.1	11.5	6.9
P3	9.9	11.4	7.0
P4	10.5	11.7	7.0
P5	10.5	12.6	7.0
Objective	**40**	**32** [a]	**20** [b]
AMCT	**-**	**-**	**10** [c]

[a] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22[16]. A value of 32 µg/m^3 is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK/IAQM guidance[10].

[b] The 20 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

[c] To be met by 2040.

As seen in *Table 7.13*, annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ throughout the site are well below the respective air quality objectives. Air quality for future residents within the proposed development is, therefore, considered acceptable.

Significance of Occupation Phase Air Quality Effects

The air quality effects for the occupation phase without additional mitigation are judged to be 'not significant', i.e. **negligible** (in line with the terminology used in this ES). This professional judgement is made in accordance with the methodology set out in *Appendix 7.4*, and takes account of the assessment that:

- pollutant concentrations at worst-case locations within the proposed development will all be well below the objectives, thus future residents will experience acceptable air quality; and

- pollutant concentrations at all of the selected worst-case existing receptors along the local road network will be well below the respective air quality objectives, and all of the impacts are predicted to be negligible.

Table 7.14 – Summary of Impact Assessment – Occupation Phase						
Receptor	**Sensitivity/ Importance/ Value**	**Description of Impact**	**Embedded & Standard Mitigation Measures**	**Nature of Effect**	**Type of Effect**	**Significance of Effect**
Existing and Consented Receptors	High	Road Traffic Emissions	Masterplan design and Framework Travel Plan (see *Section 7.5*)	Negligible	Permanent, Long-term, Direct	Not significant (Negligible)
Introduced receptors	High	Road Traffic Emissions	Masterplan design and Framework Travel Plan (see *Section 7.5*)	n/a [a]	Permanent, Long-term, Direct	Not significant (Negligible)

[a] There are no impacts at introduced receptors, and the assessment has focused on the suitability of the site for the proposed uses based on comparison against the relevant air quality objectives for human health. Future air quality conditions at the site will be acceptable, and effects are thus classified as 'not significant' (negligible).

7.7 Additional Mitigation Measures

No additional mitigation measures are proposed.

7.8 Residual Impact Assessment

This section summarises the significance of the anticipated residual environmental effects, which are those that remain after all proposed mitigation measures are implemented.

7.8.1 Construction Phase

The IAQM guidance is clear that, with appropriate mitigation in place, the residual effects will normally be 'not significant'. The mitigation measures are based on the IAQM guidance[10]. With these measures in place and effectively implemented the residual effects are judged to be 'not significant' (negligible).

The IAQM guidance does, however, recognise that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. During these events, short-term dust annoyance may occur, however, the scale of this would not normally be considered sufficient to change the conclusion that overall, the effects will be '**negligible**'.

7.8.2 Occupation Phase

The residual effects associated with traffic generated by the proposed development will be the same as those identified in *Section Assessment* of Environmental Impacts. The overall effects of the proposed development will be **negligible**.

7.9 Cumulative Impact Assessment

7.9.1 Construction Phase

The IAQM guidance[10] is clear that, with appropriate mitigation measures in place, any residual enabling works and construction dust effects from an individual site will be negligible. The guidance also suggests that cumulative construction dust impacts are only likely where sites are within 250 m of each other. Work would also have to be taking place in areas of both sites that are close to a receptor in order for cumulative effects to occur.

In accordance with the mitigation measures set out in *Appendix 7.6*, if there is concurrent construction work on sites within 250 m of each other, the construction contractors should "*hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised*".

Of the cumulative schemes identified, three are located within 250 m of the Site (Camp Field Bartons Road, Southleigh Park House, and Land east of St George's). It is anticipated that all construction sites will adopt appropriate mitigation measures to limit emissions of dust, will hold the liaison meetings recommended above, and will ensure that plans are co-ordinated to

minimise impacts upon the most sensitive receptors. Thus, the cumulative impacts of construction dust on existing sensitive receptors are considered to be 'not significant', i.e. **negligible** (in line with the terminology used in this ES).

7.9.2 Occupation Phase

The traffic data used in the 2029 'Without Proposed Development' and 'With Proposed Development' scenarios also incorporate traffic flows associated with all cumulative schemes which would affect flows on the roads included in this assessment. As such, predictions of future pollutant concentrations presented in this Chapter take account of cumulative road traffic effects.

Effects at the occupation phase, which inherently include the cumulative schemes, have been shown to be 'not significant', i.e. **negligible** (in line with the terminology used in this ES).

7.10 Achieving Compliance with the $PM_{2.5}$ targets

The modelled annual mean $PM_{2.5}$ concentrations are well below the AMCT target to be met by 2040 at all receptors, for the 'Without Scheme' and 'With Scheme' scenarios.

Defra have set out in their Interim Planning Guidance[25] two questions designed to consider whether a development supports the AMCT and PERT $PM_{2.5}$ targets. The first question is *"How has exposure to $PM_{2.5}$ been considered when selecting the development site?",* whilst the second question is *"What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools, etc.) and to reduce emissions of $PM_{2.5}$ and its precursors?"*.

As explained in *Section 7.6,* exposure to $PM_{2.5}$ and ways to minimise $PM_{2.5}$ emissions have been considered in the following ways:

- emissions during the construction phase will be managed through the use of appropriate mitigation measures;
- the planting and landscaping strategy will retain a portion of the existing trees, hedge-rows and scrubs which will act as a buffer between the proposed development and the M27 and B2148;
- advertising any promotions/discounts offered by public transport operators to increase the uptake of public transport modes;
- a commitment to implementing and promoting sustainable travel initiatives, such as pe-destrian and cycle access, and a mobility hub which will include bus stops, cycle parking, and car club spaces; and
- provision of appropriate electric vehicle charging infrastructure within the proposed de-velopment.

[25] Defra (2024) $PM_{2.5}$ Targets: Interim Planning Guidance. Available at: https://uk-air.defra.gov.uk/pm25targets/planning

It is considered that the proposed development complies with the requirements to deliver achievement of the AMCT and PERT by 2040, as appropriate action has been taken to minimise emissions of $PM_{2.5}$ and its precursors as far as is reasonably practicable.

7.11 Summary

This assessment has considered the impacts of the proposed development on local air quality in terms of dust and particulate matter emissions during construction, and emissions from road traffic generated by the completed and occupied development. It has also identified the air quality conditions that future residents will experience.

The construction works have the potential to create dust. During construction it will, therefore, be necessary to apply a package of standard mitigation measures to minimise dust emissions. Appropriate measures have been recommended and, with these measures in place, it is expected that residual effects will be 'not significant', i.e. **negligible** (in line with the terminology used in this ES).

Air quality conditions for future residents of the proposed development have been shown to be acceptable, with concentrations well below the air quality objectives throughout the site.

The assessment has demonstrated that pollutant concentrations will be well below the air quality objectives at all existing and consented receptors in 2029, with or without the proposed development. Emissions from the additional traffic generated by the proposed development will have a **negligible** impact on air quality conditions at all sensitive receptors along the affected local road network.

The overall air quality effects of the proposed development at the occupation phase are judged to be 'not significant', i.e. **negligible** (in line with the terminology used in this ES).