



PLANNING STAGE AIR QUALITY ASSESSMENT

LAND NORTH OF MELTON DRIVE

FAIRFAX PROPERTIES

SEPTEMBER 2026

PLANNING STAGE AIR QUALITY ASSESSMENT LAND NORTH OF MELTON DRIVE

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REVISION HISTORY

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1-0	First issued version	HF	AG
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1 INTRODUCTION

This report has been prepared in support of the planning application submitted by Fairfax Properties to Horsham District Council (HDC). The application seeks planning permission for the construction of 56 residential units, providing a mix of one, two, three and four bedroom dwellings with associated public open space, car parking and landscaping.

The Proposed Development will not include any combustion plant to meet the energy demand for hot water and space heating. It is however expected that the development will result in a net increase of daily vehicle movements. The air quality effects of these additional vehicle movements are addressed later within this document.

Air quality planning policy relevant to the assessment is presented and briefly discussed in Section 2 of this report. The pollutants for consideration, along with air quality standards, are presented in Section 3. The site settings and Proposed Development are described in Section 4, and baseline air quality concentrations are reviewed in Section 5. The air quality assessment and site suitability are presented in Section 6. The dispersion modelling of the operational phase are presented in Section 7. The dust risk assessment and management plan are presented in Section 8 along with construction and operational mitigation measures in Section 9. The emissions mitigation assessment is presented in Section 10 and the conclusions are presented in Section 11.

This report updates the Air Quality Assessment previously submitted to HDC in support of planning application DC/26/1168. The update includes detailed dispersion modelling undertaken following consultation with the Council's Environmental Health Officer.

2 AIR QUALITY PLANNING POLICY

2.1 National and Regional Planning Policy and Guidance

2.1.1 National Planning Policy Framework (NPPF)

The NPPF¹ published in August 2026, sets out the Government's planning policies for England. Policy P3 addresses living conditions and pollution, and states that development proposals should be appropriate for their location, taking into account the effects of pollution on health, living conditions, and the natural environment.

Policy P3 requires development to avoid unacceptable exposure to air pollution, incorporate suitable mitigation measures where necessary and sustain and contribute towards compliance with relevant limit values, national objectives and targets for air pollutants, including PM_{2.5}. Development proposals should also take account of Air Quality Management Areas (AQMA) and be consistent with the objectives of relevant Air Quality Action Plans, Clean Air Plans and Local Air Quality Strategies.

2.1.2 Planning Practice Guidance (PPG)

PPG² for air quality has been produced that gives an indication of details the local authority may want to consider when there are concerns about air quality, special requirements such as the height of chimneys and securing mitigation measures through planning conditions and obligations. The PPG considers that dust can also be a planning concern for effects on local amenity. The guidance considers that assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality. The mitigation of air quality impacts and effects is to depend on the Proposed Development and should be proportionate to the likely impact.

2.1.3 The IAQM's Guidance on the assessment of dust from demolition and construction

¹ Ministry of Housing, Communities and Local Government, National Planning Policy Framework, August 2026.

² Department for Communities and Local Government. 2019. Planning Practice Guidance – Air Quality. Revision date November 2019.

The IAQM's Guidance on the assessment of dust from demolition and construction³ seeks to reduce emissions of dust, PM₁₀ and PM_{2.5} from construction and demolition activities. The guidance considers that during the pre-application phase, local authorities should provide and advise on controlling dust and emissions and should set out their requirements for the planning application.

During the detailed application phase, the developer should submit an Air Quality and Dust Risk Assessment (AQDRA), which should confirm that an Air Quality and Dust Management Plan (AQDMP), following the IAQM guidance, will be submitted to the local authority prior to works commencing on-site.

The AQDRA provides a summary of the risk to soiling (dirt deposited on surrounding structures), health and the natural environment, and recommends emission control measures to be implemented as part of the scheme.

This document considers that the activities on construction sites can be divided into four types to reflect their different impact:

- i. demolition;
- ii. earthworks;
- iii. construction; and
- iv. trackout.

These activities can lead to three separate dust impacts:

- i. the risk of health effects due to an increase in exposure to PM₁₀;
- ii. annoyance due to dust soiling; and
- iii. harm to ecological receptors.

2.2 Local Air Quality Policy, Guidance and Local Air Quality Management

2.2.1 Air Quality and Emissions Mitigation Guidance for Sussex (2021)

The Air Quality and Emissions Mitigation Guidance for Sussex (2021)⁴ is used as a reference guide to improve air quality across Sussex.

Guidance is given for air quality assessments, which tends to be aligned with the guidance provided by the IAQM. It also states that emission mitigation assessments are required for developments that are:

- Classed as a major development, as defined by the Town and Country Planning Order;
- Within an Air Quality Management Area (AQMA);
- In relevant proximity to an AQMA;
- In an area close to exceeding the Air Quality Objectives (AQO); or/and,
- B8 storage and distribution use class with a floorspace of 500 m² or more.

If the development does not match any of the above conditions, no mitigation damage cost assessment will be required. If the development does match any of the above conditions, a damage cost calculation should be undertaken to determine an appropriate sum to be spent on mitigating the impact on air quality over a 5-year period.

2.2.2 Interim Air Quality and Emissions Mitigation Guidance for Sussex (2026)

The Interim Air Quality and Emissions Mitigation Guidance for Sussex (2026) was published by the Sussex Air Quality Partnership in July 2026⁵. The guidance adopts a low-emission strategy approach under which developments are expected to avoid, minimise or mitigate air pollutant emissions and population exposure, including where statutory air quality objectives are predicted to be achieved.

³ Institute of Air Quality Management. Guidance on the assessment of dust from demolition and construction. V2.2. 2024.

⁴ Sussex Air. Air Quality and Emissions Mitigation Guidance. 2021.

⁵ Sussex-air. Interim Air Quality Emissions Mitigation Guidance for Sussex. July 2026.

The guidance provides requirements for air quality assessments, dispersion modelling, uncertainty and sensitivity testing, construction dust assessment, good design and emissions mitigation assessments. It requires modelling assessments to provide sufficient information to allow review of the model inputs and assumptions, including traffic, meteorological and monitoring data, model verification statistics and consideration of cumulative development.

The Proposed Development meets the guidance screening criteria because it constitutes major development. An Air Quality Assessment and Emissions Mitigation Assessment have therefore been undertaken.

2.2.3 Horsham District Planning Framework (Local Plan) 2015

HDC adopted the planning framework⁶ in November 2015 and remains as the “current” local plan. The document includes policies covering housing, infrastructure, environmental protection, and community needs, and serves as the primary framework for planning decisions. Specific mention of air quality is included in Policy 24: Strategic Policy: Environmental Protection, which states:

“[...] Taking into account any relevant Planning Guidance Documents, developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they:

1. *Address land contamination by promoting the appropriate re-use of sites and requiring the delivery of appropriate remediation;*
2. *Are appropriate to their location, taking account of ground conditions and land instability;*
3. *Maintain or improve the environmental quality of any watercourses, groundwater and drinking water supplies, and prevents contaminated run-off to surface water sewers;*
4. *Minimise the air pollution and greenhouse gas emissions in order to protect human health and the environment;*
5. *Contribute to the implementation of local Air Quality Action Plans and do not conflict with its objectives;*
6. *Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality; and*
7. *Ensure that the cumulative impact of all relevant committed developments is appropriately assessed.”*

2.2.4 Storrington Air Quality Action Plan 2026 - 2031

HDC developed the Storrington Air Quality Action Plan (AQAP) following the declaration in December 2010 of an Air Quality Management Area (AQMA) covering parts of Storrington due to exceedances of the annual mean objective for nitrogen dioxide. The plan, most recently updated in 2026, sets out a range of measures to reduce pollutant concentrations throughout the town. The plan has developed actions that can be considered under the following five broad topics:

- Alternative to private vehicle use;
- Policy guidance and development control;
- Promoting low emission transport;
- Public information; and
- Traffic management.

3 AIR QUALITY – POLLUTANTS FOR CONSIDERATION

3.1 Introduction

The pollutants for consideration within HDC are nitrogen dioxide (NO₂) and particulate matter (PM).

Oxides of nitrogen include nitric oxide (NO) and nitrogen dioxide (NO₂). NO₂ can cause inflammation of the lungs, lead to shortness of breath and coughing, and can reduce immunity to lung infections such as bronchitis.

⁶ Horsham District Council. Horsham District Planning Framework. 2015.

PM₁₀ is the fraction of PM that is 10 µm or less in size, and PM_{2.5} is the fraction of PM that is 2.5 µm or less in size. Both can be drawn into the lungs and can cause respiratory illness, cardiovascular illness and mortality.

3.2 Air Quality Standards

3.2.1 European and National Air Quality Standards

Air Quality Directive 2008/50/EC⁷ introduced legally binding “limit value” targets for the member governments to reduce air pollution to concentrations at which minimal effects on health are likely to occur. The directive was transposed into law through the Air Quality Standards Regulations 2010⁸ with air quality objectives and dates by which they were to be achieved. The sensitive locations where the standards and objectives apply are places where the population is expected to be exposed to various pollutants over the averaging period in question. For objectives to which an annual mean standard applies, the most common sensitive receptor locations used to measure concentrations are areas of residential housing, since it is reasonable to expect that people living in their homes could be exposed to pollutants over such a period of time. For shorter averaging periods of between 15 minutes, 1 hour or 1 day, the sensitive receptor location can be anywhere where the public could be exposed to the pollutant over these shorter periods of time. The annual mean objectives are not relevant for the building façades of offices or other places of work where members of the public do not have regular access, kerbsides or gardens.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023⁹ defines that “*The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of PM_{2.5} in ambient air must be equal to or less than 10 µg/m³ (“the target level”)*”. The Air Quality Strategy¹⁰ introduces interim targets to be achieved by January 2028. A summary of the objectives and targets is shown in Table 3.1, as amended by the Brexit regulations.

Table 3.1: Air Quality Objectives for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Air Quality Objectives for Particulates and NO ₂		Date to be Achieved By
	Concentration	Measured as	
NO ₂	40 µg/m ³	Annual mean	31 December 2005
	200 µg/m ³ not to be exceeded more than 18 hours in a year	Hourly mean	31 December 2005
PM ₁₀	50 µg/m ³ not to be exceeded more than 35 times a year	24-hour mean	31 December 2004
	40 µg/m ³	Annual mean	31 December 2004
PM _{2.5}	10 µg/m ³	Annual mean	2040
	12 µg/m ³	Annual mean	January 2028
	20 µg/m ³	Annual mean	National objective
	35% reduction in average population exposure relative to 2018	Annual mean	2040

⁷ Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.

⁸ The Air Quality Standards Regulations 2010, SI 2010/1001

⁹ Statutory instrument. The Environmental Targets (Fine Particulate Matter) (England) Regulations. 2023.

¹⁰ Defra. Air Quality Strategy. Framework for local authority delivery. 2023.

	22 % reduction in average population exposure relative to 2018	Annual mean	2028
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The Environment Act 1995¹¹ introduced the requirement for local authority management of air quality. Part IV of this Act details the duties of local authorities in carrying out their local air quality management (LAQM) to tackle poor air quality. Part of the requirement is for the Review and Assessment of air quality and production of Updating and Screening Assessments (USA) and Status Reports. Where exceedance of these objectives is shown or anticipated, the local authority is required to produce an Air Quality Action Plan to reduce emissions and pollutant concentrations.

4 SITE SETTING & PROPOSED DEVELOPMENT

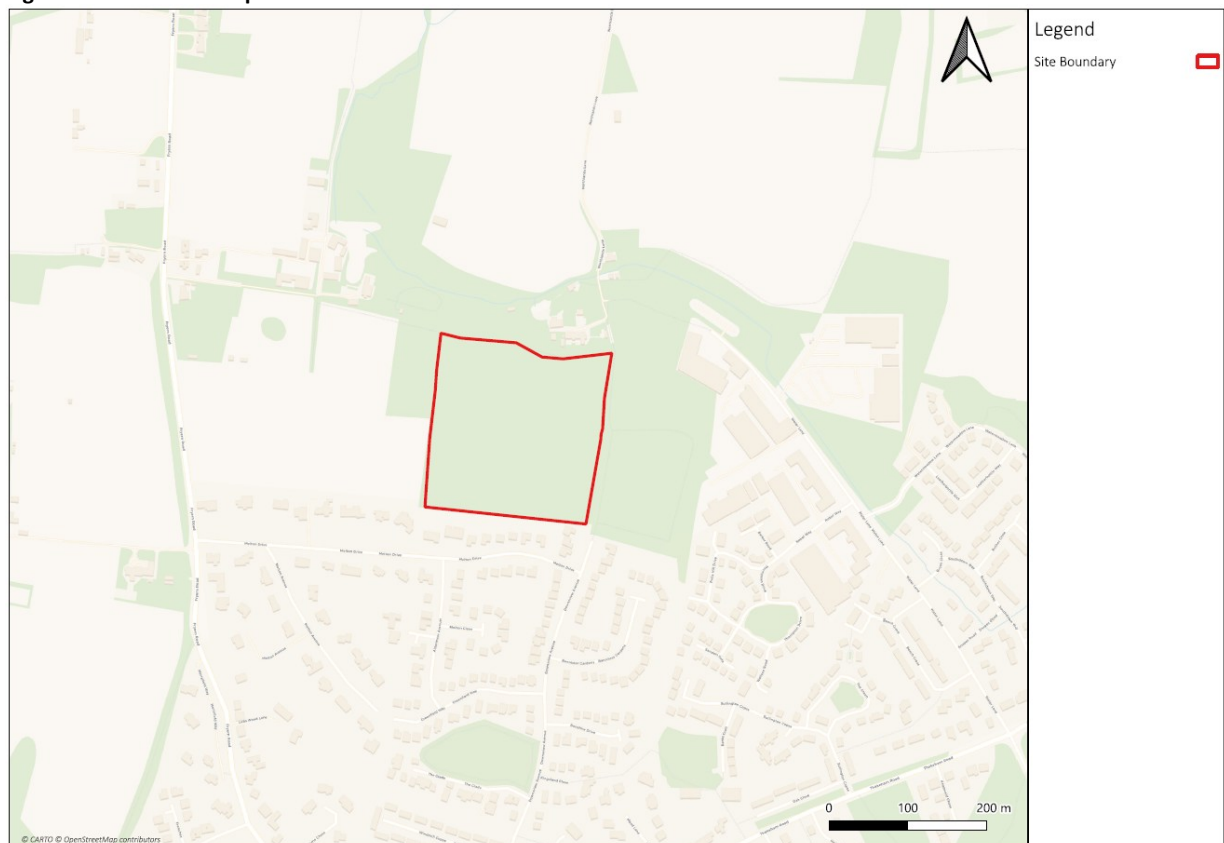
4.1 Site Setting

The site is approximately 4.36 hectares in size and is located in a rural background area, approximately 1 km north of Storrington Town centre at national grid reference (NGR) ⁵09200, ¹15300 as shown in Figure 4.1. The site previously had agricultural land use and was most recently used for dog walking. The nearest major road, Thakeham Road (the B2139), is located approximately 450 m to the southeast of the site.

The site is bounded:

- To the north by East Wantley Farm
- To the east by the consented development known as Land at Downsview Avenue (ref: DC/19/2015)
- To the south by residential properties along Melton Drive with Storrington Town beyond
- To the west by agricultural land and the consented development (ref: DISC/26/0255)

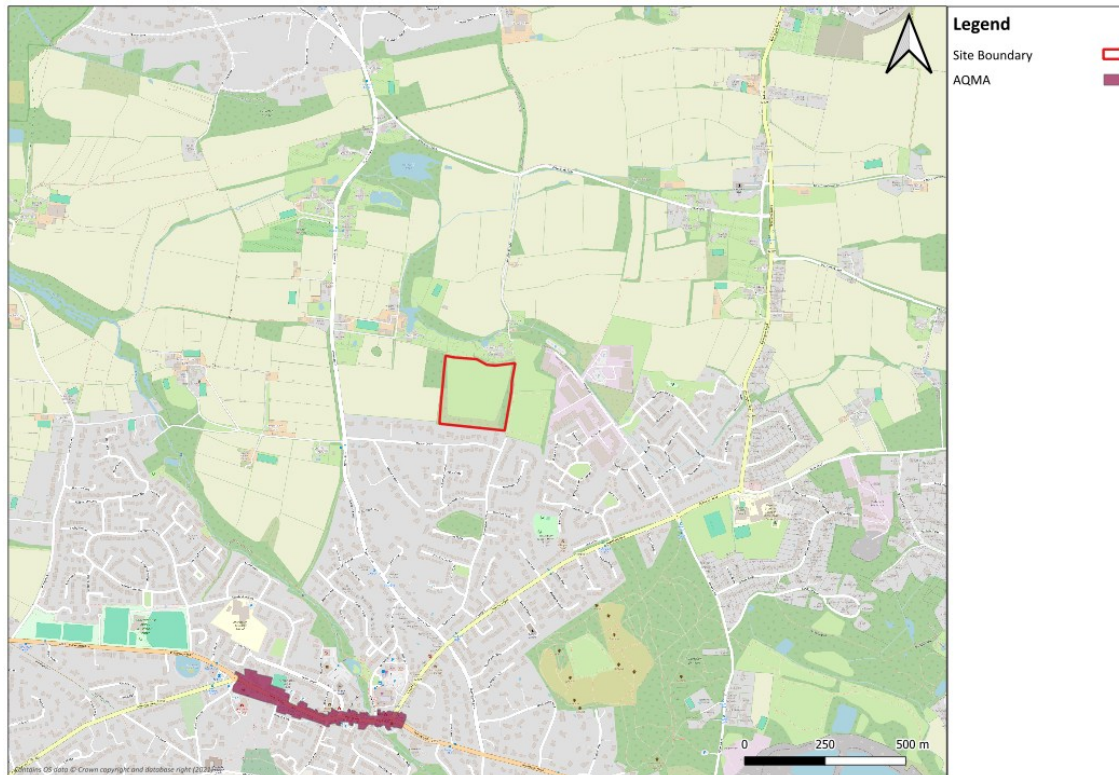
Figure 4.1: Site location plan



¹¹ Office of the Deputy Prime Minister. The Environment Act. 1995.

The site is not situated within an Air Quality Management Area (AQMA). The Storrington AQMA is located approximately 900 m to the southwest of the site, as shown on Figure 4.2. The AQMA was declared by HDC in 2010 due to exceedances of annual mean NO₂ concentrations along West Street, High Street, Church Street and Manley's Hill. The Proposed Development will not result in a significant change in traffic along the local road network but has been quantitatively assessed through dispersion modelling. These results are discussed in Section 7.

Figure 4.2: AQMA in proximity of the Proposed Development site.



4.2 Proposed Development

The Proposed Development of Land at Northlands to construct 56 residential dwellings with associated open space, landscaping and car parking. The Local Plan outlines *Strategic Policy HA18: Storrington Housing Allocations*, which identifies that the proposed site forms the eastern end of the housing allocation *STO1: Land to the north of Melton Drive and Land south of Northlands Lane*. As part of the development, vehicular access to the site will be via Fryern Road from the continuation of the main access road through the adjacent consented development site to the west of the Proposed Development site (ref DISC/26/0255).

With reference to the Transport Statement produced by i-Transport, the Proposed Development will incorporate associated parking and despite the exact numbers not being provided, the parking has been designed in line with local parking standards as set out in the West Sussex County Council's guidance on parking. The transport consultant provided details of the annual average daily traffic (AADT) generated by the Proposed Development, stating that the development will result in a maximum increase of 238 AADT on a road link (Fryern Road, south of the site). Section 6.4 shows the trip generation in more detail. The development will result in a total increase of 303 AADT.

5 BASELINE CONDITIONS

5.1 Local Authority Monitoring Data

Reference has been made to the following information sources:

- i. HDC 2026 Air Quality Annual Status Report (ASR) (published June 2026);
- ii. Defra UK-Air¹²
- iii. Air Quality England¹³.

5.1.1 Automatic Monitoring

The closest continuous monitoring station (CMS) is the roadside AURN monitor located at Manley's Hill in Storrington, known as HO4. It is located approximately 1 km to the south of the proposed site, which monitors concentrations of NO₂, PM₁₀, and PM_{2.5}. The next nearest CMS is located 14 km to the northeast of the site in Cowfold. This has not been included within this assessment as it is not seen as representative of conditions at the site.

Table 5.1 shows that annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} have remained within the respective AQO since at least 2020 at the CMS in Storrington. It is also important to note that pollutant concentrations at the Proposed Development site are expected to be substantially lower than those recorded at monitoring site HO4, as the site is not situated in close proximity to a major road.

Table 5.1: Summary of CMS annual mean concentrations in proximity of the development site.

Name (Site ID)	Distance to site (direction)	Type	Pollutant	Annual mean concentrations (µg/m ³)						AQO
				2020	2021	2022	2023	2024	2025	
Storrington AURN (HO4)	1.00 km S	Roadside	NO ₂	17.4	20.1	17.6	17.4	16.6	15.7	40
			PM ₁₀	-	-	14.0	13.7	12.6	15.1	40
			PM _{2.5}	-	-	7.3	7.7	7.7	8.5	20

The latest ASR shows that the hourly mean concentrations of NO₂ have not exceeded 200 µg/m³ on greater than the allowable 18 occasions permitted by the AQO at HO4 CMS in recent years.

5.1.2 Diffusion Tube Monitoring

HDC operates a diffusion tube network across the district to measure concentrations of NO₂. Several diffusion tubes in the vicinity of the Proposed Development are shown in Figure 5.1 and summarised in Table 5.2.

¹² Defra UK Air Website (accessed 21/09/25 via <https://uk-air.defra.gov.uk>)

¹³ Air Quality in England Website (accessed on 07/08/25 via <https://airqualityengland.co.uk/>)

Figure 5.1: Diffusion tubes in proximity of the development site

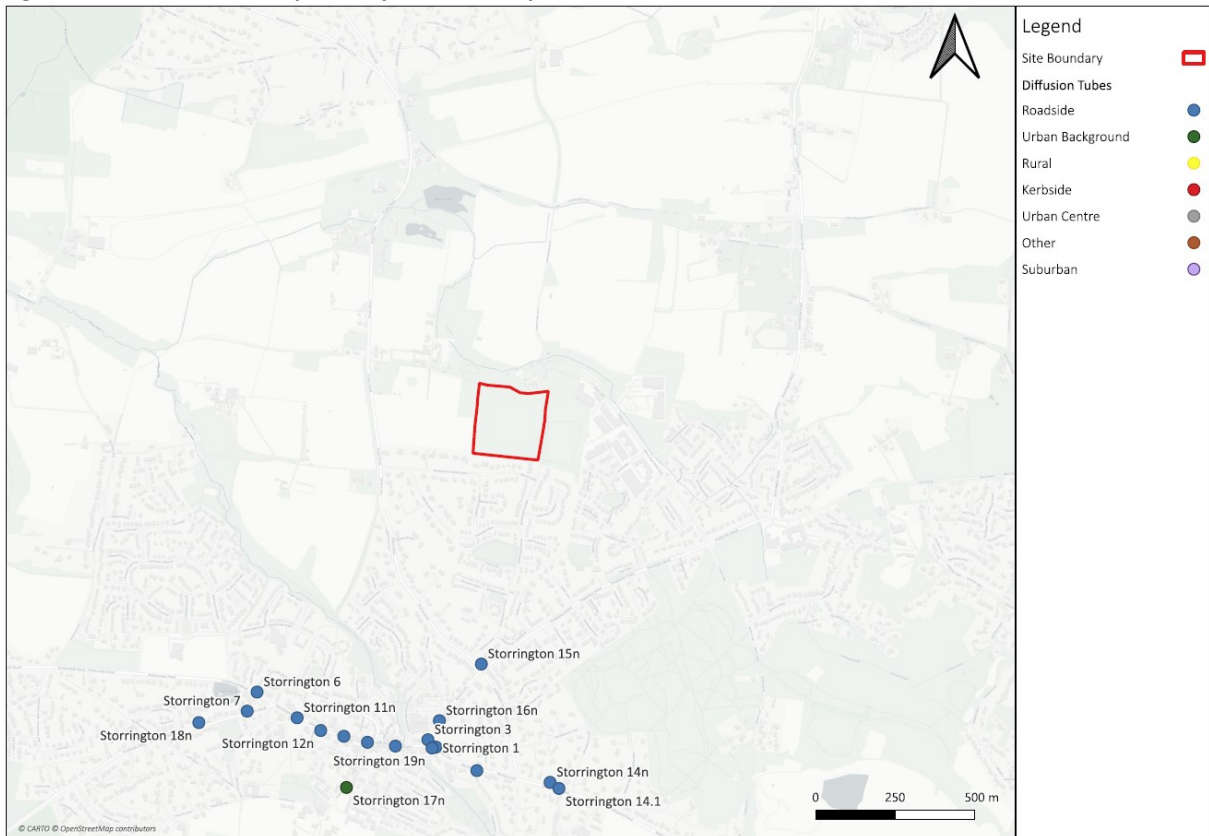


Table 5.2: Annual mean NO₂ concentrations from HDC diffusion tube monitoring

Site Name (ID)	Distance and direction from site (km)	Type	Annual mean NO ₂ concentrations (µg/m ³)					AQO
			2021	2022	2023	2024	2025	
Storrington 15n	0.66 S	Roadside	15.4	14.6	14.7	-	-	40
School Hill (Storrington 16n)	0.85 S	Roadside	19.2	18.4	17.5	15.1	17.3	
School Hill (Storrington 3)	0.91 S	Roadside	24.8	23.7	21.8	19.3	19.6	
Manley's Hill (Storrington 1)	0.93 S	Roadside	24.3	32.9	32.9	28.6	27.5	
Manley's Hill (Storrington 19n)	0.94 S	Roadside	39.6	38.1	37	32.7	35.2	
High St (Storrington 4)	0.95 S	Roadside	25.9	26.7	24.5	23.3	23.1	
West St (Storrington 5)	0.97 S	Roadside	19.9	19	19.2	16.4	16.8	
18 West St (Storrington 13n)	0.98 SW	Roadside	23.1	23	21.1	18.4	19.1	
Storrington 12n	0.99 SW	Roadside	23	22.4	20.9	-	-	
Storrington AURN*	0.99 S	Roadside	21.7	21.7	19.8	17.3	16.3	
53 West St (Storrington 11n)	1.0 SW	Roadside	26.5	25.9	24.8	20.7	20.6	
Storrington 14n	1.01 S	Roadside	15.8	26.3	23.5	-	-	
Pulborough Rd (Storrington 6)	1.01 SW	Roadside	17.1	17.4	17.9	15.9	16.6	
Moorings (Storrington 14.1)	1.03 S	Roadside	-	-	-	26.1	26.3	
Amberley Rd (Storrington 7)	1.08 SW	Roadside	17.6	17.7	18.8	15.9	15.2	

33 Church St (Storrington 17n)	1.12 S	Urban Background	10	9.6	8.2	7.6	8.5
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Exceedances of the annual mean AQO are shown in **bold**.

*Triplicate diffusion tube co-located with CMS HO4.

Table 5.2 shows that all diffusion tubes in the vicinity of the site stayed within the AQO in recent years, despite five being located within the Storrington AQMA.

The nearest diffusion tube (Storrington 15n) is located adjacent to School Hill (B2139), where relatively high traffic volumes are expected; however, monitored concentrations remain below the AQO. As noted previously, the nearest major road to the development site is Thakeham Road, located approximately 450 metres to the southeast of the site. Given this separation distance, pollutant concentrations at the development site are anticipated to be lower than those measured at the roadside diffusion tubes presented in Table 5.2, and more comparable to, but still lower than, concentrations recorded at the urban background site Storrington 17n.

5.2 Defra Background Maps

The UK-AIR background air pollutant concentration maps have also been considered. The background maps are presented in 1 km x 1 km grid squares across England, Wales, Scotland and Northern Ireland. The current version of the background maps (reference year 2021) contains estimates of NO_x, NO₂, PM₁₀ and PM_{2.5} for the period 2021 through to 2040.

The 2021 reference year background maps are based on monitoring and meteorological data for 2021. Predicted background concentrations for the reference year (2021) and current year (2026) are summarised in Table 5.3.

Table 5.3: Predicted annual mean background map concentrations for grid square centred at 509500, 115500.

Pollutant	Annual Mean Concentration (µg/m ³)		
	2021	2026	AQO
NO ₂	8.08	7.02	40
PM ₁₀	10.64	10.20	40
PM _{2.5}	6.33	5.94	20

All predicted background concentrations in Table 5.3 indicate that the pollutant concentrations at the Proposed Development site are well within the respective AQO and have decreased from 2021 to 2026.

5.3 Summary

The Proposed Development is located at a rural background location away from major roads, and therefore, it is not anticipated to be influenced significantly by road traffic emissions. Following a review of published information sources, baseline concentrations of NO₂, PM₁₀ and PM_{2.5} are all assumed to be below their respective long and short-term AQOs at the Proposed Development site, even at roadside locations.

6 AIR QUALITY ASSESSMENT

6.1 Introduction

Developments can introduce new receptors into areas with poor air quality. They can also increase emissions of air pollutants during their construction and operational phases, and so these matters are assessed.

6.2 Site Suitability

The site is not situated within an AQMA and is located over 450 m from the nearest significant source of pollution, Thakeham Road.

The Proposed Development comprises the construction of 56 residential units with associated car parking, landscaping, and open space.

The Local Air Quality Management (LAQM) technical guidance (LAQM.TG22) states that likely exceedances of the AQO should be assessed in relation to ‘the quality of the air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present.’

The focus is therefore on those locations where members of the public are likely to be regularly present and are likely to be exposed for a significant amount of time appropriate to the averaging period of the objective.

Research carried out on behalf of Defra¹⁴ concluded that exceedances of the 1-hour mean for NO₂ are unlikely to occur where the annual mean is below 60 µg/m³. As annual mean concentrations are expected to be below 60 µg/m³ in the vicinity and within the site, it can therefore be assumed that the short-term (1-hour) mean AQO is not at risk of being exceeded.

From the review of published information sources presented in Section 5, baseline concentrations of NO₂, PM₁₀ and PM_{2.5} are anticipated to be well within the respective annual mean and short-term AQOs at the Proposed Development site.

Published monitoring and background data indicate that pollutant concentrations within the Proposed Development site are below the relevant AQOs. However, detailed dispersion modelling has been undertaken following consultation with HDC to assess site suitability and the effect of development-generated traffic on existing, proposed, consented and ecological receptors and on the Storrington AQMA. The detailed assessment is presented in Section 7.

6.3 Construction Phase

The Proposed Development has the potential to result in emissions of dust and PM₁₀ during the construction phase, prior to mitigation. The risk of impacts is assessed in Section 8, with recommended mitigation measures outlined in Section 9.

The construction traffic will access the site via Fryern Road. It is expected that the consented development to the west of the site will be constructed prior to works of the Proposed Development. Development traffic will avoid being routed through the Storrington AQMA, and instead is expected to utilise Fryern Road, Thakeham Road, Water Lane and Washington Road.

6.4 Operational Phase

6.4.1 Traffic Emissions

The Transport Statement by i-Transport shows the Proposed Development is anticipated to result in an increase of 303 daily vehicle movements (238 on a singular road link). The development flows within the AQMA are below 100 AADT. Despite this being below the screening criteria to necessitate dispersion modelling, a detailed assessment has been carried out in the following section to assess the impact of the development traffic on existing receptors along the local road network. The area spanning the Storrington AQMA has also been modelled for the opening year (2028) to establish whether the concentrations within the AQMA are expected to exceed the AQO. Table 6.1 shows the net increase of daily traffic associated with the Proposed Development on the local road network.

Table 6.1: two-way AADT development flows on local road network

Road Link	Two-Way Development Flows			
	AM	PM	AM + PM	AADT
Fryern Road (north of the site)	7	6	13	64
Fryern Road (south of the site)	24	24	48	238
Fryern Road (north of Mill Lane)	24	24	48	238
Fryern Road (south of Mill Lane)	18	18	36	179

¹⁴ AEA Energy and Environment (2008). ‘Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedances of the 1-hour mean AQO Objective’

Thakeham Road (northeast of Fryern Road)	10	8	18	89
School Hill	9	10	19	94
A283 Manley's Hill	9	10	19	94
Mill Lane	6	6	12	60
High Street (west of Mill Lane)	5	5	10	50

Although no individual road within or adjacent to the AQMA is predicted to experience an increase exceeding 100 AADT, HDC requested a detailed dispersion modelling assessment because of the development's proximity to the Storrington AQMA and the need to understand cumulative effects. Detailed modelling has therefore been undertaken and is presented in Section 7.

6.4.2 Building Emissions

The heating and hot water demand is intended to be met by a non-combustion system such as air source heat pumps. Consequently, the Proposed Development will not introduce any plant that emits significant NO_x or PM₁₀ concentrations.

7 OPERATIONAL PHASE IMPACT ASSESSMENT

7.1 Methodology

This section assesses air quality conditions at various sensitive receptor locations along the local road network and within the site, including existing receptors, proposed receptors, ecological receptors and future receptors as part of consented development.

Dispersion modelling has been undertaken using ADMS Roads v.5.1.0.2. The model requires the user to provide various input data related to traffic flows and road characteristics.

The assessment has been undertaken by comparing predicted pollutant concentrations at sensitive receptors against the relevant AQOs. As the assessment relates primarily to the change in traffic on the local road network, the key consideration is whether existing receptors would be impacted by an increase of air quality emissions, particularly those within the Storrington AQMA.

The impact of the Proposed Development on local air quality has been assessed by comparing the predicted concentrations in the 'without development' (Do Minimum) and 'with development' (Do Something) scenarios in the assumed opening year of 2028. The significance of impacts (change in concentration) at existing and future receptor locations have been assessed in accordance with the jointly produced IAQM/EPUK planning guidance¹⁵. Table 7.1 shows the criteria for the significance of the development's impact at modelled receptors.

Table 7.1: Significance of Impact

Concentration at receptor in assessment year	% Change in concentration relative to AQO			
	1	2 - 5	6 - 10	> 10
75% or less of AQO	Negligible	Negligible	Slight	Moderate
76 – 94% of AQO	Negligible	Slight	Moderate	Moderate
95 – 102% of AQO	Slight	Moderate	Moderate	Substantial
103 – 109% of AQO	Moderate	Moderate	Substantial	Substantial
110% or more of AQO	Moderate	Substantial	Substantial	Substantial

The scenarios that have been considered are summarised in Table 7.2.

¹⁵ Moorcroft and Barrowcliffe. et al. (2017) 'Land-use Planning & Development Control: Planning for Air Quality. v1.2'. IAQM

Table 7.2: Summary of model scenarios

Scenario	Traffic Data Year	Emission Factor Year	Background Concentration year	Notes
Verification	2025	2025	2025	Verification using DfT road link data and comparing the model against local monitoring sites.
Do Minimum (with committed development but without Proposed Development)	2028	2028	2028	Principal assessment
Do Something (with committed development and Proposed Development)	2028	2028	2028	Principal assessment with development traffic
Do Minimum (with committed development but without Proposed Development)	2028	2025	2025	Sensitivity test
Do Something (with committed development and Proposed Development)	2028	2025	2025	Sensitivity test

The 2028 DM and DS scenarios form the principal assessment and the basis of the reported impact descriptors and conclusions.

A sensitivity test has also been carried out using future traffic flows with 2025 background concentrations and emission data. Both vehicle emissions and background pollutant concentrations are expected to decrease over time due to fleet emission improvements and increasing uptake of electric vehicles, along with the effect of regional and national air quality policies. However, traffic is expected to increase over time. The sensitivity test therefore represents a conservative scenario and is likely to overestimate future pollutant concentrations.

The results of the sensitivity assessment are presented in Appendix E and are used to test whether uncertainty in projected emission factors and background concentrations could alter the assessment conclusions.

7.2 Input Parameters

7.2.1 Background Concentration

For model verification, the 2025 annual mean NO₂ concentration measured at the Storrington 17n urban background monitoring site was used to represent the local background contribution. Grid-specific 2025 Defra background concentrations were used for NO_x, PM₁₀ and PM_{2.5}.

For the principal 2028 DM and DS scenarios, grid-specific 2028 Defra background concentrations were assigned to each receptor according to its 1 km by 1 km grid square. The 2025 sensitivity assessment uses the corresponding 2025 background concentrations.

The background concentrations applied to each receptor and assessment scenario are presented in Appendix A.

7.2.2 Traffic Data

This assessment primarily focuses on the impact of additional traffic emissions associated with the Proposed Development on the local road network. The modelled road network is shown in Figure 7.1.

Figure 7.1: Modelled road network



Traffic data for the 2028 DM and DS scenarios were provided by i-Transport. The DM scenario includes background traffic growth and traffic associated with the relevant committed developments identified by the transport consultant. The DS scenario includes the same cumulative assumptions together with traffic generated by the Proposed Development.

The traffic flows, HDV proportions and average speeds used for each modelled link are presented in Appendix B.

7.2.3 Street Canyons

Street-canyon effects have been represented within ADMS-Roads where buildings adjoining the modelled road network may restrict the dispersion of road-traffic emissions. Street canyons were assigned only to road links where the surrounding building configuration was considered capable of materially influencing local dispersion.

The canyon geometry was defined using the distance between the road and adjoining buildings, average building height and the length of the building frontage on each side of the road. The inputs were derived from available mapping, aerial imagery and building information and were applied consistently to the verification, Do Minimum and Do Something scenarios.

The street canyon input parameters are shown in Appendix C.

7.2.4 Emission Factors

Emission rates were calculated from traffic flows entered within ADMS Roads using the EFT version 14.2. The EFT allows users to calculate road vehicle pollutant emission rates for NO_x, PM₁₀ and PM_{2.5} for a specified year, road type, vehicle speed and vehicle fleet composition. The road type was set as 'Urban (not London)' which is considered to be most representative of the study area.

The principal 2028 DM and DS scenarios use 2028 emission factors to represent the anticipated opening year. A sensitivity assessment has also been undertaken using 2025 emission factors with 2028 traffic flows to examine the effect of assuming no improvement in vehicle emission factors between the verification and opening years. The sensitivity results are presented in Appendix E.

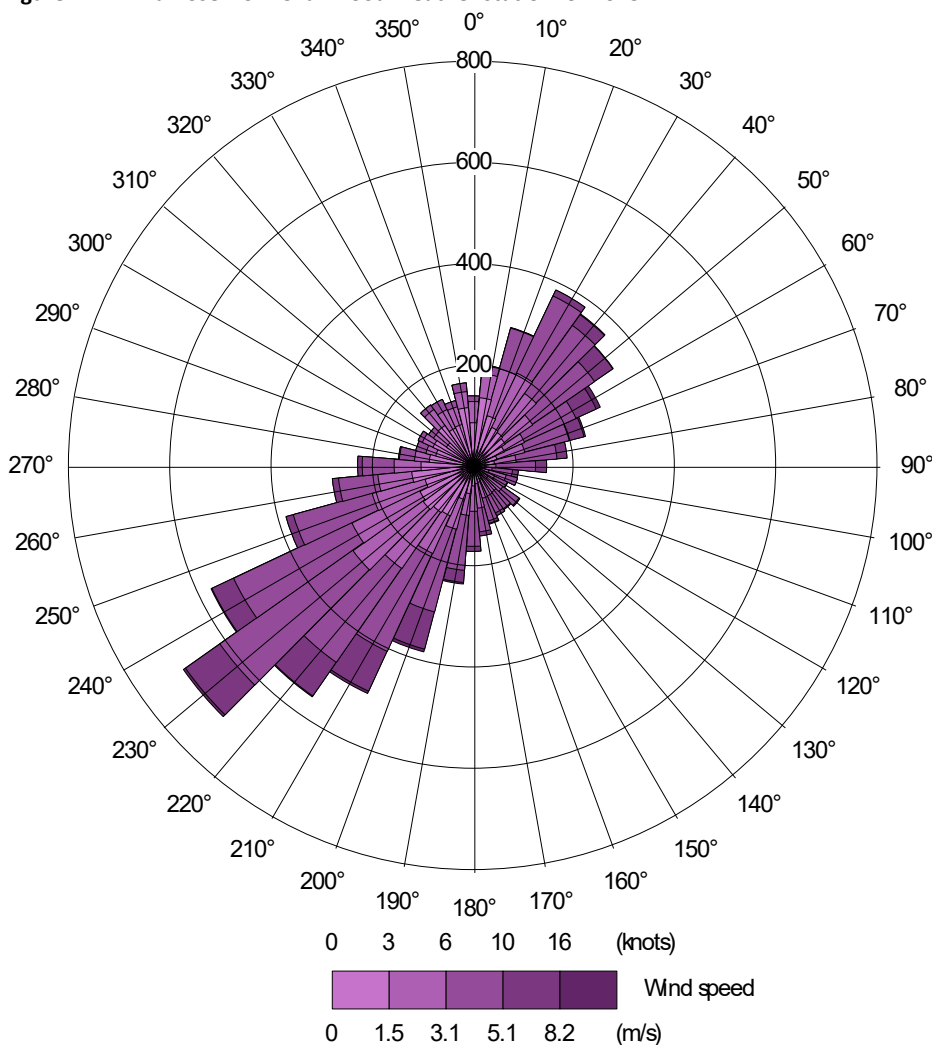
7.2.5 Meteorological Data and Monin-Obukhov

ADMS Roads requires meteorological data, which it uses to simulate the behaviour of exhaust emission plumes in different weather conditions.

Hourly sequential meteorological data for 2025 were obtained from the Met Office station at Charlwood, located approximately 29 km north east of the Proposed Development at NGR 523979, 139795. Charlwood is an inland station and was selected as its setting is considered more representative of Storrington than Brighton City Airport, which is influenced by its coastal location.

A wind rose illustrating the meteorological data is presented in Figure 7.2. This indicates that the most frequent and strongest winds are from the southwest.

Figure 7.2: Wind Rose from Charlwood weather station for 2025.



The file for 2025 contains 8534 usable lines of meteorological data (met lines), which equates to over 97% usable data.

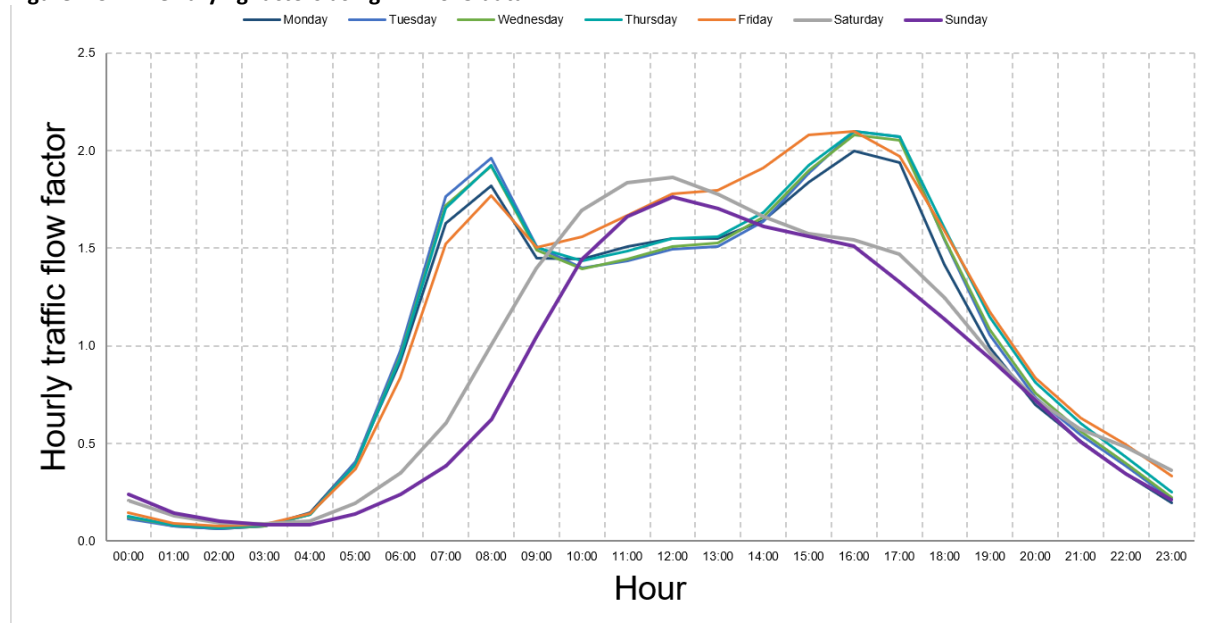
A surface roughness length of 1.0 m was used to represent the mixed urban and woodland characteristics of the model domain. A surface roughness of 0.3 m was assigned to the Charlwood meteorological station to represent its more open surroundings.

A minimum Monin–Obukhov length of 30 m was applied within the model to the met site and the dispersion site. This parameter represents the minimum degree of atmospheric stability associated with the modelled surface characteristics. The selected surface parameters were applied consistently to the verification and future-year scenarios.

7.3 Time-Varying Profile

Vehicle movements vary with day of the week and time of the day. Diurnal profiles were included within the model using the published DfT Road Traffic Estimates (TRA)¹⁶. The DfT TRA0307 dataset provides the proportion of annual traffic occurring during each hour of the day for different days of the week. The selected 2025 profiles were normalised so that the application of the time-varying factors preserves the input AADT. The factors were applied consistently to the verification, DM and DS scenarios.

Figure 7.3: Time varying factors using DfT 2025 data



7.4 Model Verification and Adjustment

Model verification was undertaken using 2025 traffic, meteorological and local monitoring data. Nine roadside monitoring locations were used. The co-located Storrington 8, 9 and 10 diffusion tubes were excluded because the HO4 automatic monitor was used at the same location. Storrington 14.1 was excluded because overhanging tree branches made the exposure setting unrepresentative of the road dispersion conditions represented by the model. Full site selection, calculations, plots and residual statistics are provided in Appendix D.

The comparison of monitored and modelled road NO_x resulted in an adjustment factor of 1.4310. This factor was applied to modelled road NO_x before conversion to total NO₂ using Defra's NO_x to NO₂ Calculator (version 9.1). The adjusted total NO₂ Root Mean Square Error (RMSE) is 3.05 µg/m³, equivalent to 7.64% of the NO₂ AQO. This is below the ideal value of 4 µg/m³ identified in LAQM.TG22 and indicates good overall model performance.

¹⁶ Department for Transport (2025). *Road Traffic Estimates: Annual Daily Traffic Flow and Distribution*, Table TRA0307.

The same factor was applied conservatively to modelled road PM₁₀ and PM_{2.5} contributions because there were insufficient suitable local data to verify particulate matter separately. The implications of this assumption are considered in Section 7.10.

Table 7.3: Model verification summary

Parameter	Result
Verification year	2025
Monitoring locations used	9
Road NOx adjustment factor	1.431
Adjusted total NO ₂ RMSE	3.05 µg/m ³
RMSE as percentage of annual mean objective	7.64%
Overall model performance	Good

7.5 Modelled Receptor Results

The development will introduce new high-sensitivity receptors and increase the AADT on the local road network. The focus is primarily on existing receptors located in proximity of the local road network. The assessment has modelled concentrations at 1.5 m above each finished floor level (breathing height).

The change in concentration experienced at the existing receptor locations as a result of the Proposed Development traffic has been used to assess the significance of impacts in accordance with IAQM/EPUK guidance.

Modelled receptor locations are indicated on Figure 7.4 and the abbreviations are explained below.

- ER = Existing Receptor
- PR = Proposed Receptor
- CD = Consented Development
- AW = Ancient Woodland
- SW = Sullington Warren SSSI
- CM = Chantry Mill SSSI

Figure 7.4: Modelled existing receptors



Receptor locations have been placed at positions most likely to experience higher concentrations, such as at the façade of buildings facing major roads, along street canyons and at junctions. Together, these choices ensure that a realistic, precautionary worst-case has been assessed.

7.5.1 Background Concentration used at each modelled receptor location

Grid-specific 2028 Defra background concentrations have been used for all pollutants in the principal DM and DS scenarios. The 2025 background concentrations have been used only in the sensitivity assessment presented in Appendix E. The background concentrations assigned to each receptor are presented in Appendix A.

Background NO₂, PM₁₀ and PM_{2.5} levels are likely to be lower at elevated heights due to increased distance from emission sources, such as roads. Within this assessment, it has been assumed that the background concentration remains the same for all floor heights.

7.6 Impact Assessment at Existing Receptors

The impact at individual receptors for future year scenarios has been assessed with reference to guidance produced jointly by the IAQM and EPUK. An impact descriptor is determined for each receptor based on the change in annual mean pollutant concentration between the DM and DS scenarios and the total pollutant concentrations relative to the AQO with the scheme in place. Impacts have been assessed in the context of predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentrations. For PM_{2.5}, the total concentration has been expressed as a percentage of the 12 µg/m³ annual mean target to be achieved by 2028, which is more stringent than the current statutory objective of 20 µg/m³.

Annual mean NO₂, PM₁₀ and PM_{2.5} concentrations were predicted at each receptor location and have been summarised in the following section. The results presented in Sections 7.6 to 7.9 are from the principal 2028 DM and DS scenarios, using 2028 traffic data, emission factors and background concentrations. The separate 2025 sensitivity assessment is presented in Appendix E.

The footnotes to Table 6.3 of the IAQM/EPUK guidance (which recommends impact descriptors for use in Air Quality Assessments) states that the impact descriptors are for individual receptors only and that ‘the overall significance is determined using professional judgement. For example, a ‘moderate’ adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered’. Section 7.5 of the guidance goes on to state that a ‘moderate’ or ‘substantial’ impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health.

7.6.1 Nitrogen Dioxide

Table 7.4: Nitrogen dioxide DM v DS impact on existing receptors

Sensitive Receptor	Annual Mean NO ₂ Concentration (µg/m ³)			% Change in Concentration Relative to AQO	Total as % AQO	Significance of Impact
	DM	DS	Change (Impact)			
ER1	6.32	6.33	0.01	0.02	≤ 75%	Negligible
ER2	6.48	6.49	0.01	0.02	≤ 75%	Negligible
ER3	6.74	6.79	0.05	0.12	≤ 75%	Negligible
ER4	7.04	7.07	0.03	0.08	≤ 75%	Negligible
ER5	7.59	7.62	0.03	0.08	≤ 75%	Negligible
ER6	7.64	7.66	0.02	0.05	≤ 75%	Negligible
ER7	7.84	7.86	0.02	0.05	≤ 75%	Negligible
ER8	9.35	9.36	0.01	0.02	≤ 75%	Negligible
ER9	9.45	9.46	0.01	0.03	≤ 75%	Negligible
ER10	8.61	8.62	0.01	0.02	≤ 75%	Negligible
ER11	7.98	7.98	0.00	0.00	≤ 75%	Negligible
ER12	8.90	8.90	0.00	0.00	≤ 75%	Negligible
ER13	10.17	10.18	0.01	0.02	≤ 75%	Negligible
ER14	9.34	9.35	0.01	0.02	≤ 75%	Negligible
ER15	7.64	7.65	0.01	0.03	≤ 75%	Negligible

The annual mean NO₂ objective is 40 µg/m³. Table 7.4 presents the predicted annual mean NO₂ concentrations at existing receptors for the DM and DS scenarios.

Predicted concentrations are well below the annual mean NO₂ objective at all existing receptors. The largest development related increase is predicted at ER3, located to the south of the proposed site access, where the annual mean concentration is predicted to increase by 0.05 µg/m³. This represents 0.12% of the annual mean NO₂ objective.

LAQM.TG22 states that dispersion models cannot predict short-term concentrations as reliably as long-term concentrations. Previous research carried out on behalf of Defra¹⁷ concluded that exceedances of the 1-hour mean for NO₂ are unlikely to occur where the annual mean is below 60 µg/m³. The annual mean concentrations of NO₂ are predicted to be well below 60 µg/m³ at all of the existing receptors, and it can therefore be assumed that the short-term (1-hour) mean AQO will not be exceeded.

The Proposed Development will not cause an exceedance of the annual mean nitrogen dioxide objective. In accordance with the EPUK and IAQM guidance, impacts at all existing receptors are therefore assessed as negligible.

7.6.2 PM₁₀

¹⁷ Laxen D and Marner B (2003). Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites

Table 7.5: PM₁₀ DM v DS impact on existing receptors

Sensitive Receptor	Annual Mean PM ₁₀ Concentration (µg/m ³)			% Change in Concentration Relative to AQO	Total as % AQO	Significance of Impact
	DM	DS	Change (Impact)			
ER1	9.58	9.59	0.00	0.01	≤ 75%	Negligible
ER2	9.65	9.66	0.00	0.01	≤ 75%	Negligible
ER3	9.77	9.80	0.02	0.06	≤ 75%	Negligible
ER4	9.86	9.87	0.01	0.03	≤ 75%	Negligible
ER5	10.05	10.06	0.01	0.03	≤ 75%	Negligible
ER6	10.15	10.16	0.01	0.02	≤ 75%	Negligible
ER7	10.25	10.25	0.01	0.02	≤ 75%	Negligible
ER8	10.45	10.46	0.00	0.01	≤ 75%	Negligible
ER9	10.88	10.89	0.01	0.01	≤ 75%	Negligible
ER10	10.65	10.65	0.00	0.01	≤ 75%	Negligible
ER11	10.18	10.18	0.00	0.00	≤ 75%	Negligible
ER12	10.49	10.50	0.00	0.01	≤ 75%	Negligible
ER13	10.74	10.74	0.00	0.01	≤ 75%	Negligible
ER14	10.73	10.74	0.00	0.01	≤ 75%	Negligible
ER15	10.20	10.21	0.01	0.01	≤ 75%	Negligible

The annual mean PM₁₀ objective is 40 µg/m³. Table 7.5 presents the predicted annual mean PM₁₀ concentrations at existing receptors for the DM and DS scenarios.

Predicted concentrations are well below the annual mean PM₁₀ objective at all existing receptors. The largest development related increase is predicted at ER3, located to the south of the proposed site access, where the annual mean concentration is predicted to increase by 0.02 µg/m³. This represents 0.06% of the annual mean PM₁₀ objective.

With reference to guidance in LAQM.TG22, using a dispersion model to predict exceedances of the short-term (24-hour mean) AQO for PM₁₀ may be challenging. It therefore provides the following formula for estimating the number of daily exceedances based on the annual mean concentration:

$$\text{No. 24-hour mean exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + (206/\text{annual mean})$$

The maximum predicted PM₁₀ annual mean concentration is 10.89 µg/m³. Using the formula, the number of days predicted to exceed 50 µg/m³ over a 24-hour averaging period would be 2 days (2.29), which is well below the permitted 35 exceedances. The short-term AQO is therefore not predicted to be exceeded at any of the modelled receptors.

The Proposed Development will not cause an exceedance of the annual mean PM₁₀ AQO. In accordance with the EPUK and IAQM guidance, impacts at all existing receptors are therefore assessed as negligible.

7.6.3 PM_{2.5}

Table 7.6: PM_{2.5} DM v DS impact on existing receptors

Sensitive Receptor	Annual Mean PM _{2.5} Concentration (µg/m ³)			% Change in Concentration Relative to AQO	Total as % AQO	Significance of Impact
	DM	DS	Change (Impact)			
ER1	5.68	5.68	0.00	0.02	≤ 75%	Negligible
ER2	5.72	5.72	0.00	0.03	≤ 75%	Negligible
ER3	5.80	5.81	0.01	0.15	≤ 75%	Negligible
ER4	6.05	6.06	0.01	0.08	≤ 75%	Negligible

ER5	6.17	6.18	0.01	0.08	≤ 75%	Negligible
ER6	6.15	6.16	0.01	0.06	≤ 75%	Negligible
ER7	6.21	6.21	0.00	0.04	≤ 75%	Negligible
ER8	6.44	6.44	0.00	0.03	≤ 75%	Negligible
ER9	6.62	6.63	0.00	0.04	≤ 75%	Negligible
ER10	6.47	6.47	0.00	0.03	≤ 75%	Negligible
ER11	6.26	6.26	0.00	0.01	≤ 75%	Negligible
ER12	6.46	6.46	0.00	0.02	≤ 75%	Negligible
ER13	6.62	6.62	0.00	0.02	≤ 75%	Negligible
ER14	6.61	6.61	0.00	0.02	≤ 75%	Negligible
ER15	6.18	6.19	0.00	0.04	≤ 75%	Negligible

Despite the annual mean PM_{2.5} objective within England being 20 µg/m³, the interim target of 12 µg/m³ has been used within this assessment. Table 7.6 presents the predicted annual mean PM_{2.5} concentrations at existing receptors for the DM and DS scenarios.

Predicted concentrations are well below the annual mean PM_{2.5} objective at all existing receptors. The largest development related increase is predicted at ER3, located to the south of the proposed site access, where the annual mean concentration is predicted to increase by 0.01 µg/m³. This represents 0.15% of the annual mean PM_{2.5} objective.

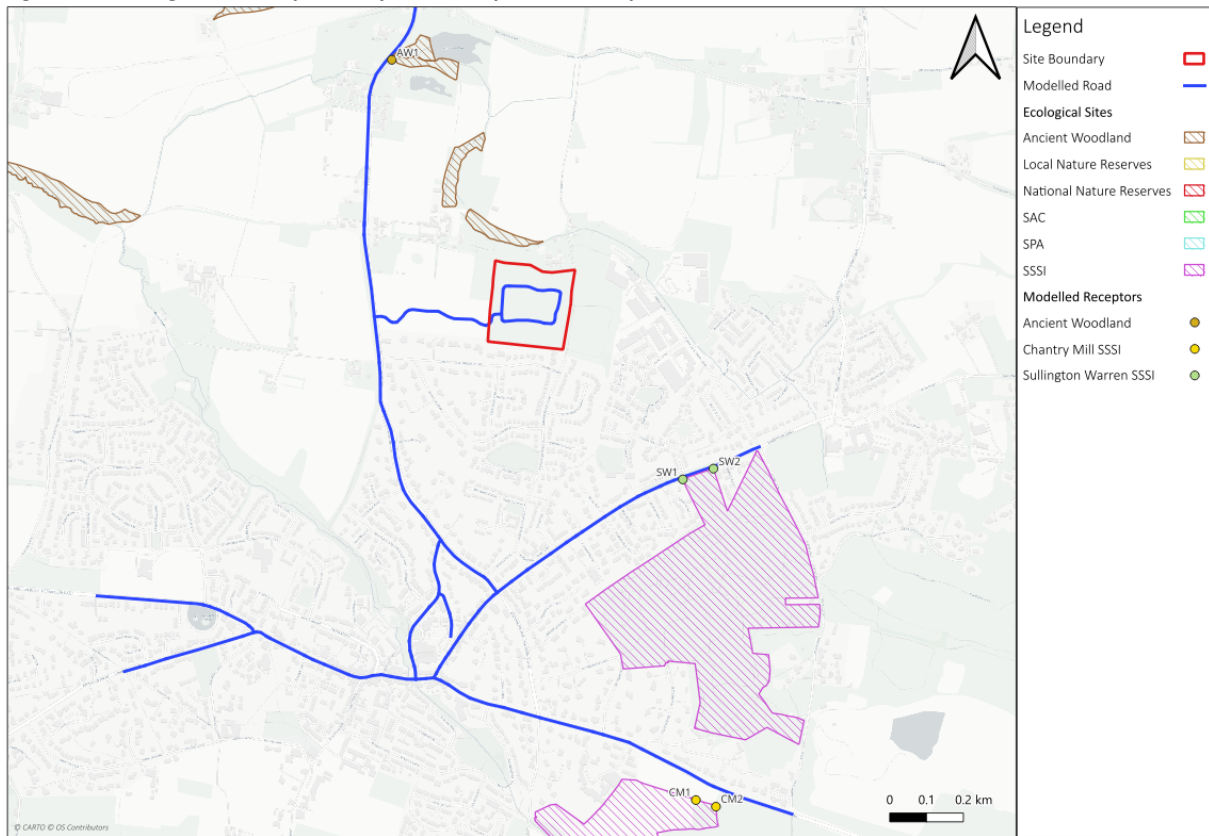
The Proposed Development will not cause an exceedance of the PM_{2.5} AQO. In accordance with the EPUK and IAQM guidance, impacts at all existing receptors are therefore assessed as negligible.

7.7 Ecological Receptors

7.7.1 Assessment Approach

Relevant ecological receptors were identified in proximity to roads affected by development traffic. These comprise Sullington Warren SSSI, Chantry Mill SSSI and an area of ancient woodland, as shown in Figure 7.5.

Figure 7.5: Ecological sites in proximity of the Proposed Development



Annual mean nitrogen oxides concentrations were predicted at representative locations on the nearest boundary of each ecological receptor to the affected road network. Receptors were modelled at a height of 0 m to represent exposure at vegetation height. Where more than one point was modelled at an ecological receptor, the maximum predicted concentration is reported.

Background annual mean nitrogen oxides concentrations were obtained from the Air Pollution Information System (APIS) interactive map¹⁸. Predicted road nitrogen oxides concentrations were adjusted using the model verification factor derived from comparison with local monitoring data. Total concentrations have been calculated from the adjusted road contribution and the Defra background concentration of NO_x for 2028.

The annual mean nitrogen oxides critical level for the protection of vegetation is 30 µg/m³. In accordance with the IAQM guidance and the Sussex Air Quality Planning guidance, a development Process Contribution (PC) of 1% or more of the relevant critical level, equivalent to 0.3 µg/m³, is considered to require further assessment.

Table 7.7: Ecological screening assessment of development's process contribution

Ecological receptor	NO _x background (µg/m ³)	DM total NO _x (µg/m ³)	DS total NO _x (µg/m ³)	PC (µg/m ³)	PC as % of critical level	Significance
SW1	8.15	12.71	12.76	0.049	0.16%	Not significant
SW2	8.15	12.77	12.81	0.049	0.16%	Not significant
CM1	7.73	9.00	9.01	0.006	0.02%	Not significant
CM2	7.73	9.14	9.15	0.007	0.02%	Not significant
AW1	7.71	9.56	9.60	0.035	0.12%	Not significant

The maximum development-related NO_x contribution is 0.049 µg/m³ at Sullington Warren SSSI, equivalent to 0.16% of the annual mean NO_x critical level. At the ancient woodland receptor, the predicted contribution is

¹⁸ APIS (2026). *Air Pollution Information System pollutant mapping*.

0.035 $\mu\text{g}/\text{m}^3$, equivalent to 0.12% of the critical level. These contributions are below the 1% screening criterion identified in the Sussex Air Quality Planning guidance.

The maximum NO_x contribution is also substantially below 0.4 $\mu\text{g}/\text{m}^3$, below which the IAQM nature-sites guidance indicates that an exceedance of 1% of the most stringent nitrogen deposition critical load is unlikely in many circumstances, subject to habitat type and deposition velocity. On this basis, and subject to confirmation that the identified habitats are appropriately represented, significant air quality effects are not anticipated.

7.8 Predicted Concentrations at Proposed Receptors and Adjacent Consented Development

7.8.1 Proposed Receptors

As the Proposed Development will introduce new receptors, pollutant concentrations have been predicted across the site at 1.5 m above ground level, to represent typical breathing height.

Table 7.8: Summary of results within the Proposed Development

Pollutant	Annual mean ($\mu\text{g}/\text{m}^3$)		
	Minimum	Mean	Maximum
NO ₂	6.65	6.77	7.13
PM ₁₀	10.06	10.11	10.27
PM _{2.5}	5.81	5.85	5.95

Annual mean concentrations of NO₂ are predicted to be well within the AQO across the site, with concentrations ranging from 6.65 – 7.13 $\mu\text{g}/\text{m}^3$ across the site.

The annual mean concentrations of NO₂ are predicted to be well below 60 $\mu\text{g}/\text{m}^3$ at all of the proposed receptors, and it can therefore be assumed that the short-term (1-hour) mean AQO will not be exceeded.

The predicted annual mean concentration of PM₁₀ is well below the respective annual mean AQO of 40 $\mu\text{g}/\text{m}^3$ across the Site, with concentrations predicted to be 10.06 -10.27 $\mu\text{g}/\text{m}^3$.

The predicted annual mean concentration of PM_{2.5} is well below the respective annual mean AQO of 20 $\mu\text{g}/\text{m}^3$ across the Site, with concentrations predicted to be 5.81 -5.95 $\mu\text{g}/\text{m}^3$.

7.8.2 Consented Development Receptors

It is currently not known whether receptors within the adjacent consented development site (ref DISC/26/0255) will be present by the time the Proposed Development is operational. The dispersion model has however modelled multiple consented development receptors using the drawings associated with the consented development from the HDC planning portal.

Table 7.9: Summary of results at consented development receptor

Pollutant	Annual mean ($\mu\text{g}/\text{m}^3$)	
	Minimum	Maximum
NO ₂	6.34	6.40
PM ₁₀	9.59	9.62
PM _{2.5}	5.68	5.70

Annual mean concentrations at the consented development receptors are below the respective AQO. The impact of the development traffic on consented development receptors is classified as negligible at both modelled receptors.

7.8.3 Summary of Predictions at the Proposed Development

Predicted concentrations were below the relevant AQOs within the site boundary and surrounding area for all pollutants. Concentrations were all less than 75% of the AQO. PM_{2.5} concentrations are well within the current

national binding AQO of $20 \mu\text{g}/\text{m}^3$ and are also below the interim target of $12 \mu\text{g}/\text{m}^3$ to be achieved by 2028 and the more stringent target of $10 \mu\text{g}/\text{m}^3$ to be achieved by 2040.

7.9 Concentrations within the AQMA

A model has also been run across the AQMA within Storrington for the 2028 DS scenario. This was modelled at 1.5 m above ground level. The grid was modelled at a high resolution of 5 m (x axis) and 2.5 m (y axis).

The contour plots show that there are no exceedances of the respective AQO of NO_2 , PM_{10} or $\text{PM}_{2.5}$.

Figure 7.6: Predicted annual mean NO_2 concentration contour plot within the AQMA (1.5 m)



Figure 7.7: Predicted annual mean PM₁₀ concentration contour plot within the AQMA (1.5 m)



Figure 7.8: Predicted annual mean PM_{2.5} concentration contour plot within the AQMA (1.5 m)



7.10 Assumptions, Uncertainty and Limitations

Dispersion modelling is subject to uncertainty arising from traffic forecasts, emission factors, background concentrations, meteorological conditions, monitoring data and the simplification of real-world dispersion conditions within ADMS Roads.

Model verification against nine local monitoring locations resulted in an adjustment factor of 1.431 and an adjusted total NO₂ RMSE of 3.05 µg/m³. The RMSE is below the ideal value of 4 µg/m³ identified in LAQM.TG22. Residual spatial variation remains, including underprediction at some locations and overprediction at others, and this has been considered when interpreting the results.

For site suitability, the maximum predicted 2028 DS annual mean NO₂ concentration within the Proposed Development is 7.13 µg/m³. This remains below 36.95 µg/m³, representing the 40 µg/m³ objective minus the calculated RMSE. The conclusion that the site is suitable for residential use is therefore not sensitive to the residual model uncertainty represented by the RMSE.

The principal assessment uses projected 2028 emission factors and background concentrations. A sensitivity assessment has therefore been undertaken using 2025 emission factors and background concentrations with 2028 traffic data. The sensitivity assessment predicts higher total concentrations but does not result in any additional exceedance or change to the impact descriptors or overall significance conclusion.

The model uses 2025 meteorological data from Charlwood, which is not site-specific but is considered representative of the inland study area. The use of the NO_x verification factor for road PM contributions introduces additional uncertainty because suitable local PM monitoring data were not available. Predicted PM concentrations nevertheless remain sufficiently below the relevant assessment criteria that this uncertainty does not alter the conclusions.

7.11 Significance of Effects

The principal 2028 assessment predicts negligible impacts at all existing and consented human receptors. No exceedances of the relevant AQOs are predicted within the Proposed Development or at assessed receptors within the modelled part of the AQMA. The sensitivity assessment does not alter these findings.

Having considered the magnitude and spatial extent of the predicted changes, total concentrations relative to the assessment criteria, the number and sensitivity of affected receptors, cumulative traffic assumptions and residual model uncertainty, the overall operational air quality effect is considered not significant.

8 CONSTRUCTION DUST RISK ASSESSMENT

8.1 Introduction

The purpose of this assessment is to identify the category of risk from dust emission associated with the demolition, earthworks, construction and track-out phases, and to put in place a suitable management and mitigation strategy, to ensure negative impacts and adverse effects are controlled and reduced.

The first step of the assessment is to conduct screening to establish if there is a need to proceed to detailed assessment. A dust risk assessment typically proceeds if there is a human receptor within 250 m of the boundary of the site or 50 m of the routes used by construction vehicles on the public highway, up to 250 m from the site entrances.

The IAQM guidance indicates that construction impacts on local air quality can be divided into four key areas;

- i. Demolition;
- ii. Earthworks;
- iii. Construction; and
- iv. Trackout.

8.2 Dust Emission Magnitude

The dust emission magnitude has been assessed for each of the four key areas above in relation to the Proposed Development. The dust emission magnitude is based on the scale of the anticipated works and is classified as small, medium, or large and is considered prior to mitigation. The following tables have been formatted to demonstrate the criteria that the development is within for the specific measure/detail.

8.2.1 Demolition

The Proposed Development does not comprise any demolition works and therefore, there is no dust risk associated with demolition.

8.2.2 Earthworks

Table 8.1 shows the IAQM criteria for assessing the dust emission magnitude for earthworks.

Table 8.1: Summary of IAQM criteria and development details for earthworks

IAQM Criteria				Development Details
Measure	Large	Medium	Small	
Total site area	> 110,000 m ²	18,000 m ² - 110,000 m ²	< 18,000 m ²	Approx. 43,500 m ²
Soil type	Potentially dusty soil type (e.g. clay)	Moderately dusty soil type (e.g. silt)	Large grain soil type (e.g. sand)	Bedrock: Hythe Formation – Sandstone. High to low potential for dust when dry Superficial deposits: Head – Clay, silt, sand and gravel. High to low dust potential.
Heavy earth moving vehicles active at once	> 10	5-10	< 5	5 – 10
Height of bunds	> 6 m	3- 6 m	< 3 m	No bunds

The site is approximately 43,500 m² and it is understood that the development will introduce paved haul roads. Due to the size and nature of the development, it is estimated that between five and ten heavy earth-moving vehicles will be active on the site at any given time, and it is not expected that any bunds will be positioned on site.

The British Geological Society (BGS) Open Geology of Britain Viewer indicates that the bedrock geology beneath the site is Hythe Formation (sandstone) which has a low to high dust potential when dry. BGS also records that the superficial deposits at the site is Head (clay, silt, sand and gravel) which has a low to moderate potential for dust generation when dry.

The potential earthworks dust emission magnitude is considered to be '**Medium**'.

8.2.3 Construction

Table 8.2 shows the IAQM criteria for assessing the dust emission magnitude for construction.

Table 8.2: Summary of IAQM criteria and development details for construction

IAQM Criteria				Development Details
Measure	Large	Medium	Small	
Total building volume	> 75,000 m ³	12,000 m ³ – 75,000 m ³	< 12,000 m ³	Approximately 20,000 m ³

Construction material	High dust potential and on-site concrete batching or sandblasting	Potentially dusty construction material such as concrete	Construction material with low dust potential (e.g. metal cladding or timber)	Brick and tile, concrete batching on site.
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The Proposed Development comprises the construction of 56 residential dwellings which will result in a total building volume of 12,000 m³ – 75,000 m³ (estimated to be approximately 20,000 m³). It is expected that the dwellings will be two storeys in height and constructed of traditional brick and tile. New access roads will also be constructed.

The potential construction dust emission magnitude is considered to be **‘Medium’**.

8.2.4 Trackout

Table 8.3 shows the IAQM criteria for assessing the dust emission magnitude for trackout.

Table 8.3: Summary of IAQM criteria and development details for trackout

IAQM Criteria				Development Details
Measure	Large	Medium	Small	
HDV movements	> 50 HDV outward movements in any one day	20 – 50 HDV outward movements in any one day	< 20 HDV outward movements in any one day	<20 HDV outward movements
Surface material	Potentially dusty surface material (e.g. high clay content)	Moderately dusty surface material (e.g. high clay content)	Surface material with low dust potential	Clay, silt and gravel. High to low dust potential
Unpaved road length	> 100 m	50 – 100 m	< 50 m	Haulage roads anticipated to be put in place during early stages of construction.

Trackout dust impacts are associated with HDVs leaving the site after moving over unpaved ground where they will accumulate mud and dirt that can then be tracked out onto the public roads. Trackout impacts are linked to the number of outward HDV movements in a day.

Due to the size of the site and the nature of the development, it is expected that haulage roads will be constructed during early stages of construction. This will allow deliveries and site traffic to use the hardstanding surfaces where available. Consequently, there will be a limited potential for dust from bare ground and a minimal impact as the haulage roads will be used where possible.

The potential dust emission magnitude in the absence of mitigation is considered to be **‘Small’**.

8.2.5 Summary

A summary of the assessed dust emission magnitude, for individual construction activities is displayed in Table 8.4.

Table 8.4: Summary of the potential Dust Emission Magnitude

Phase	Dust Emission Magnitude
Demolition	N/A
Earthworks	Medium
Construction	Medium
Trackout	Small

8.3 Sensitivity of the Area

8.3.1 Introduction

The overall sensitivity of the area (as determined by the number and sensitivity of receptors within a given distance) is summarised in the following sections. Figure 8.1 and Figure 8.2 below show the 20 m, 50 m and 100 m buffers from the site boundary and 20 m and 50 m buffers from the anticipated trackout route.

Professional judgement has been applied, and therefore, for trackout impacts, the trackout route for potential dust effects has been considered to be up to 100 m from the site exit along Fryern Road, and receptors within 50 m of the anticipated routes for HDVs have been considered. Receptors within the adjacent consented development (ref DISC/26/0255) to the west of the site have been included within this assessment, assuming that they will be occupied during the construction of this development.

Figure 8.1: Distance buffers from the development site.



Figure 8.2: buffers from the anticipated trackout route



8.3.2 Dust Soiling Effects

The sensitivity of receptors to dust soiling effects is dependent upon the duration and frequency that people would expect to be exposed to the effects. Residential receptors can be expected to enjoy a high level of amenity and background levels of dust soiling are expected to be low. It can be expected that dust soiling would diminish the aesthetics of their property, and such receptors are therefore assessed as being of high sensitivity. Residential properties, schools, nurseries and care homes are considered to be of high sensitivity for the purpose of this assessment.

Medium sensitivity receptors are those where users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home or people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Places of work and community uses are considered to be of medium sensitivity for the purpose of this assessment.

Low sensitivity receptors are those where the enjoyment of amenity would not reasonably be expected, or property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. Exposure is of a transient nature and people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.

The buildings closest to the site are residential properties, which are considered to be of high sensitivity with respect to dust soiling. There are between 10-100 high-sensitivity receptors located within 50 m of the site boundary and within 50 m of the anticipated trackout route.

The sensitivity of the surrounding area with regards to dust soiling effects is therefore considered to be **'Medium'** with respect to activities undertaken on site and **'High'** along the trackout route.

8.3.3 Human Health

For health effects of PM₁₀, sensitivities are based on whether or not the receptor is likely to be exposed to elevated concentrations over a 24-hour period.

High-sensitivity receptors are those locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (eight hours or more in a 24-hour period). Indicative examples include residential properties, hospitals, schools, nurseries and residential care homes.

Workers are considered to be of medium sensitivity for the purpose of this assessment and low sensitivity receptors are those locations where human exposure is transient e.g. public footpaths, playing fields, parks and shopping streets.

With reference to monitoring data presented in Section 5, annual mean concentrations of PM₁₀ are predicted to be below 24 µg/m³ in the vicinity of the site and it is predicted that 10-100 high-sensitivity receptors will be present within 50 m of the site and the anticipated trackout route.

Taking into account the number and sensitivity of receptors identified in the dust-soiling section above and assumed baseline concentrations of PM₁₀, the sensitivity of the surrounding area with regards to human health impacts is considered to be '**Low**'.

8.3.4 Ecological Effects

With reference to the Multi Agency Geographic Information for the Countryside (MAGIC) website¹⁹ there are no sensitive ecological sites within 50 m of the site or trackout route. Therefore, the ecological impact of the Proposed Development has not been considered further.

8.3.5 Summary

The sensitivity of the area surrounding the site is summarised in Table 8.5. For trackout impacts, receptors have been included up to 100 m from the site entrance and within 50 m of the anticipated routes for HDVs. As there are no relevant sensitive ecological receptors these are not considered further

Table 8.5: Sensitivity of the Area

Receptor Sensitivity	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust soiling	Medium	Medium	High
Human health	Low	Low	Low
Ecological	N/A	N/A	N/A

8.4 Risk of Impacts

When the dust emission magnitude is combined with the sensitivity of the area, the risk of impacts with no mitigation applied can be determined. This determines the level of mitigation to be applied. The summary of the dust risk assessment is presented in Table 8.6.

Table 8.6: Summary of Dust Risk Impacts

Summary	Earthworks	Construction	Trackout
Dust soiling	Medium	Medium	Low
Human health	Low	Low	Negligible

¹⁹ www.magic.gov.uk (accessed 11/11/2025)

In summary, the site is considered as a **‘Medium Risk’** during earthworks and construction and a **‘Low Risk’** during trackout for dust soiling effects. There is a **‘Low Risk’** during earthworks and construction, and the risk is **‘negligible’** during trackout for human health effects. The dust risk is used to define the amount of site-specific mitigation that is required. The mitigation measures are described in Section 9.

9 CONSTRUCTION & OPERATIONAL MITIGATION MEASURES

9.1 Construction Phase

With reference to the IAQM guidance, the following measures in Table 9.1 form the dust management plan and are the IAQM recommended measures based on the risk assessment presented in Section 8:

Table 9.1: Dust Management Plan

Reference	Mitigation Measure	Notes
Communications		
CM1	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	
CM2	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	
CM3	Display the head or regional office contact information.	
CM4	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real time PM ₁₀ continuous monitoring and/or visual inspections.	2 no. MCERTS dust monitors on site transects.
Site Management		
SM1	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	
SM2	Make the complaints log available to the local authority when asked.	
SM3	Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.	
Monitoring		
MT1	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.	
MT2	Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	
MT3	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	
MT4	Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences.	
Preparing and maintaining the site		
PM1	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	
PM2	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	
PM3	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	
PM4	Avoid site runoff of water or mud.	

PM5	Keep site fencing, barriers and scaffolding clean using wet methods.	
PM6	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	
PM7	Cover, seed or fence stockpiles to prevent wind whipping.	
Operating vehicle/machinery and sustainable travel		
OV1	Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards.	Best practice but not required as not in the ULEZ
OV2	Ensure all vehicles switch off engines when stationary - no idling vehicles.	
OV3	Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	
OV4	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	
OV5	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	
Operations		
OP1	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	
OP2	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	
OP3	Use enclosed chutes and conveyors and covered skips.	
OP4	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	
OP5	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Waste management		
WM1	Avoid bonfires and burning of waste materials.	
Earthworks		
EW1	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	
EW2	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	
EW3	Only remove the cover in small areas during work and not all at once.	
Construction		
CS1	Avoid scabbling (roughening of concrete surfaces) if possible.	
CS2	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	
CS3	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	
Trackout		
TO1	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	
TO2	Avoid dry sweeping of large areas.	
TO3	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	
TO4	Record all inspections of haul routes and any subsequent action in a site logbook.	

T05	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
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9.2 Operational Phase

9.2.1 Introduction

Guidance on mitigating air quality impacts is provided in a document produced by the IAQM. The guidance emphasises that all developments should adopt good design principles to reduce emissions and minimise cumulative impacts regardless of the outcome of individual air quality assessments.

9.2.2 Proposed Operational Mitigation Measures

The site is located in an area where concentrations of all pollutants are expected to be well within the relevant AQOs. The site is considered to be suitable for development without the requirement for mitigation measures to reduce exposure.

The Proposed Development is not anticipated to generate a significant increase of AADT. Consequently, the development will not contribute any significant additional emissions to the local road network. It should also be noted that electric vehicle charging will be provided in line with Policy 25 of the Emerging Local Plan.

The heating and hot water demand for the scheme is anticipated to be met by non-combustion system (e.g. air source heat pumps). This approach ensures good air quality design is applied as minimal localised emissions of NOx or PM will be introduced, if any.

9.3 Summary

The overall effect on local air quality from the construction and operation of the Proposed Development is considered to be 'not significant' provided the construction mitigation measures in the dust management plan are in place.

10 EMISSIONS MITIGATION ASSESSMENT

In accordance with the published *Air Quality and Emissions Mitigation Guidance for Sussex (2021)*²⁰ and the *Interim Air Quality and Emissions Mitigation Guidance for Sussex (2026)*, an emissions mitigation assessment has been carried out.

The guidance published sets out the screening criteria which is reproduced in Table 10.1.

Table 10.1: Screening criteria for an emissions mitigation assessment

Is the Proposed Development:	Outcome
a major development, as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015?	Yes
Within or in relevant proximity to an AQMA?	Yes
in an area close to exceeding the AQOs?	No
B8 storage and distribution use class with a floorspace of 500 m ² or more?	No

If any of the above outcomes are 'Yes', an Air Quality Assessment and an Emissions Mitigation Assessment is required, unless agreed in writing with the HDC Air Quality Officer.

As set out in the criteria above, an Emissions Mitigation Assessment is required for the development.

The emissions mitigation assessment provides a basis for quantifying the financial commitment required for offsetting potential development-generated emissions. The assessment calculates a damage cost by utilising

²⁰ Sussex-air, air quality and emissions mitigation guidance for Sussex. 2021.

the current Defra Emission Factor Toolkit (EFT) version 14.2²¹ to estimate the annual link emissions associated with the additional development generated traffic over a 5-year period.

The calculation attributes a monetary value to those emissions using the figures per tonne outlined by Defra air quality damage cost guidance²². The EFT outputs are input to the Defra air quality appraisal damage costs toolkit²³.

Detailed trip generation information has been provided by the project's Transport Consultant, i-Transport. Based on the data provided, the Proposed Development will generate 303 two way vehicle movements per day, none of which are HGV movements.

The guidance follows the standard procedure of assuming an average trip distance of 10 km/trip and the average speed as 50 kph. The calculation was undertaken for both NO_x and PM emissions for each of the first five years of operation, from 2028 to 2032. The road type 'urban (not London)' has been used within the EFT. The EFT input and output factors have been shown in Table 10.2.

Table 10.2: EFT inputs

Factor	Value
Additional daily two-way trips	303
Speed assumed (km/h)	50
Distance travelled	10 km
HGV %	0%
Damage cost price base year	2025
Start Year	2028
End Year	2032
Road type	Urban (not London)
NO _x damage cost type	Road Transport Urban Small (£10,012 per tonne)
PM _{2.5} damage cost type	Road Transport Urban Small (£84,998 per tonne)

Defra damage costs have been applied in accordance with current national guidance. The Road Transport Urban Small central damage cost category has been applied to NO_x and PM_{2.5} emissions, reflecting the location of the affected road network within Storrington. The calculation uses a 2025 price base and covers the first five years of operation from 2028 to 2032. Tables 10.3 and 10.4 present the annual emissions and corresponding damage costs.

Table 10.3 presents the annual EFT emissions for each of the first five years of operation, while Table 10.4 presents the corresponding annual damage costs.

Table 10.3: EFT Outputs (tonne/annum)

	2028	2029	2030	2031	2032
NO_x	0.1364	0.1161	0.0971	0.0807	0.0667
PM_{2.5}	0.0194	0.0189	0.0185	0.0181	0.0178

Table 10.4: Output from Damage Cost Appraisal Toolkit

	2028	2029	2030	2031	2032	Total
Central Value NO_x	£1,365.53	£1,145.16	£943.90	£772.87	£629.27	£4,856.73
Central Value PM_{2.5}	£1,645.70	£1,586.04	£1,526.84	£1,474.95	£1,427.96	£7,661.49

²¹ DEFRA Emissions Factor Toolkit version 14.2, 2026. Accessed: <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/>

²² DEFRA air quality appraisal: damage cost guidance, 2025. Accessed: <https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance>

²³ DEFRA air quality appraisal: damage costs toolkit, 2025.

**Combined 5
year total**

£ 12,518.22

Note: Totals have been calculated using values to 2 decimal places.

The total central value of the damage associated with NO_x and PM_{2.5} emissions over the first five years of operation is £12,518.22. This has been calculated using the latest Road Transport Urban Small damage cost category.

The Sussex Air Quality Planning guidance states that the calculated damage cost represents the minimum financial value to be committed to measures that mitigate or offset the emissions associated with a development. Where appropriate mitigation cannot be incorporated within the development, the equivalent value may be secured through a planning obligation for investment in off-site measures that improve local air quality.

A financial contribution of £12,518.22 towards off site air quality measures is proposed to be secured, subject to agreement with HDC.

Table 10.5: Itemised mitigation measures

Mitigation Measure	Financial Value
Section 106 contribution towards off site air quality measures	£12,518.22

The total value of the proposed additional mitigation is equal to the calculated central damage cost associated with the development

Standard mitigation will also be required for all developments that answer 'Yes' to any of the screening criteria outlined in Table 10.1.

The scheme is understood to include one active electric vehicle charging space per dwelling. The heating and hot water demand is also anticipated to be met using an air source heat pump system, avoiding local emissions associated with combustion plant. These measures represent standard requirements and good design practice and have therefore not been assigned a financial value as additional air quality mitigation.

The Air Quality and Emissions Mitigation Guidance for Sussex provides standard mitigation measures that apply to all major developments:

- All gas-fired boilers to meet < 40 mg NO_x/kWh
- Provide one electric vehicle (EV) charging point per dwelling with dedicated parking or 1 charging point per 10 spaces (unallocated parking)

Additional 'offsetting' mitigation measures that can be used to reduce the Section 106 contribution are as follows:

- Support the Local Cycling and Walking Infrastructure Plans
- Improve cycle paths to link to the existing local cycle network
- Provide electric bikes Additional air-quality mitigation implemented over and above baseline obligations established by building regulations
- Support the Local EV charging infrastructure
- Invest in EV charging infrastructure within the development over and above the current recommended parking standards (minimum 7kW (fast) charger)
- Set up and maintain a car club within the development or contribute to the cost of a local car club Set up or join an existing car sharing scheme for residents
- Designate parking spaces for car club/car sharing vehicles Designate parking spaces for low emission vehicles
- Provide vouchers for alternatives to private car use
- Invest in the creation and establishment of Green Infrastructure. Including trees and woodland (urban forests) to enhance deposition and filtration of particulate matter and atmospheric pollutants; and

strategically positioned hedgerow and tree planting, particularly in locations adjacent to typical highway pollution sources, to support the dispersion and interception of atmospheric pollutants where open-access receptors are present (such as footpaths, property access points, and publicly accessible open spaces).

- Contribute to unfunded measures identified in Air Quality Action Plan and Air Quality Strategies.

11 CONCLUSIONS

Anderson Acoustics Ltd was commissioned by Fairfax Properties to undertake an Air Quality Assessment for the Proposed Development at Land North of Melton Drive, Storrington. The Proposed Development comprises the construction of 56 residential dwellings.

The site is not situated within an AQMA, and baseline concentrations of monitored air pollutants are well below the annual and short-term AQOs based on a review of published data sources. Detailed ADMS Roads modelling was undertaken following consultation with HDC to assess cumulative traffic effects, site suitability and concentrations within the modelled part of the AQMA.

The model was verified using 2025 local monitoring, traffic and meteorological data. The road NO_x adjustment factor was 1.431 and the adjusted total NO₂ RMSE was 3.05 µg/m³, equivalent to 7.64% of the annual mean objective. This indicates good overall model performance.

The principal assessment used 2028 traffic, emission factors and background concentrations. Impacts at all existing and consented receptors were negligible. No exceedance of the relevant NO₂, PM₁₀ or PM_{2.5} assessment criterion was predicted at existing receptors, within the proposed development or within the modelled part of the AQMA. The 2025 sensitivity assessment predicted higher concentrations but did not alter the impact descriptors or conclusions.

Development related NO_x contributions at Sullington Warren SSSI, Chantry Mill SSSI and the assessed ancient woodland receptor were below 1% of the annual mean NO_x critical level. Subject to confirmation by the project ecologist that the relevant habitats and designated features have been represented appropriately, a significant air quality effect is not anticipated.

There is a 'medium risk' of dust soiling during earthworks and construction and a 'low risk' during trackout for dust soiling. There is a 'low risk' for human health impacts during earthworks and construction and a negligible risk during trackout, prior to the consideration of mitigation. Recommended mitigation measures are outlined in Table 9.1. Provided mitigation is employed for the duration of the construction works, the overall effect on local air quality is judged to be 'not significant'.

The Proposed Development is expected to generate 303 two-way vehicle movements per day. The associated central damage cost for NO_x and PM_{2.5} emissions over the first five years of operation is £12,518.22. A financial contribution of £12,518.22 towards off-site air quality measures is proposed, subject to agreement with HDC. Heating and hot water are anticipated to be provided by a non-combustion system, such as air source heat pumps, avoiding local NO_x and particulate matter emissions from combustion plant. The overall operational air quality effect is therefore considered to be not significant.

Accordingly, the Proposed Development is considered a suitable use of the site and compliant with relevant air quality policy and guidance.

APPENDIX A

BACKGROUND CONCENTRATIONS

Table A1: Background concentrations for 2025

Sensitive Receptor	NGR		Annual Mean Concentrations ($\mu\text{g}/\text{m}^3$)			
	X	Y	NO _x	NO ₂	PM ₁₀	PM _{2.5}
ER1	508718.694	115509.024	8.54	8.50	9.73	5.83
ER2	508763.050	115459.003	8.54	8.50	9.73	5.83
ER3	508785.779	115199.834	8.54	8.50	9.73	5.83
ER4	508848.272	114845.049	9.28	8.50	9.89	6.12
ER5	508949.683	114629.693	9.28	8.50	9.89	6.12
ER6	509077.068	114517.228	9.11	8.50	9.91	6.05
ER7	509014.978	114433.493	9.11	8.50	9.91	6.05
ER8	508943.050	114282.361	9.28	8.50	9.89	6.12
ER9	509126.176	114188.087	9.11	8.50	9.91	6.05
ER10	509602.580	114052.719	9.11	8.50	9.91	6.05
ER11	508757.409	114292.155	9.28	8.50	9.89	6.12
ER12	508555.481	114337.770	9.28	8.50	9.89	6.12
ER13	508454.770	114392.290	9.28	8.50	9.89	6.12
ER14	508419.824	114439.285	9.28	8.50	9.89	6.12
ER15	509412.309	114715.617	9.11	8.50	9.91	6.05
PR1	509118.283	115302.700	9.23	8.50	10.28	6.01
PR2	509138.315	115256.176	9.23	8.50	10.28	6.01
PR3	509265.408	115327.374	9.23	8.50	10.28	6.01
CD1	508831.010	115259.073	8.54	8.50	9.73	5.83
CD2	508939.347	115282.814	8.54	8.50	9.73	5.83
SW1	509604.798	114820.461	9.11	8.50	9.91	6.05
SW2	509687.924	114849.692	9.11	8.50	9.91	6.05
CM1	509642.531	113952.441	8.59	8.50	10.18	5.84
CM2	509695.161	113934.529	8.59	8.50	10.18	5.84
AW1	508812.322	115962.304	8.54	8.50	9.73	5.83

Table A2: Background concentrations for 2028

Sensitive Receptor	NGR		Annual Mean Concentrations ($\mu\text{g}/\text{m}^3$)			
	X	Y	NO _x	NO ₂	PM ₁₀	PM _{2.5}
ER1	508718.694	115509.024	7.71	6.10	9.49	5.62
ER2	508763.050	115459.003	7.71	6.10	9.49	5.62
ER3	508785.779	115199.834	7.71	6.10	9.49	5.62
ER4	508848.272	114845.049	8.29	6.53	9.64	5.91
ER5	508949.683	114629.693	8.29	6.53	9.64	5.91
ER6	509077.068	114517.228	8.15	6.43	9.67	5.84
ER7	509014.978	114433.493	8.15	6.43	9.67	5.84
ER8	508943.050	114282.361	8.29	6.53	9.64	5.91
ER9	509126.176	114188.087	8.15	6.43	9.67	5.84
ER10	509602.580	114052.719	8.15	6.43	9.67	5.84
ER11	508757.409	114292.155	8.29	6.53	9.64	5.91
ER12	508555.481	114337.770	8.29	6.53	9.64	5.91
ER13	508454.770	114392.290	8.29	6.53	9.64	5.91
ER14	508419.824	114439.285	8.29	6.53	9.64	5.91
ER15	509412.309	114715.617	8.15	6.43	9.67	5.84

PR1	509118.283	115302.700	8.37	6.59	10.03	5.80
PR2	509138.315	115256.176	8.37	6.59	10.03	5.80
PR3	509265.408	115327.374	8.37	6.59	10.03	5.80
CD1	508831.010	115259.073	7.71	6.10	9.49	5.62
CD2	508939.347	115282.814	7.71	6.10	9.49	5.62
SW1	509604.798	114820.461	8.15	6.43	9.67	5.84
SW2	509687.924	114849.692	8.15	6.43	9.67	5.84
CM1	509642.531	113952.441	7.73	6.11	9.94	5.62
CM2	509695.161	113934.529	7.73	6.11	9.94	5.62
AW1	508812.322	115962.304	7.71	6.10	9.49	5.62

APPENDIX B

TRAFFIC FLOWS

Table B 1: 2025 verification traffic data

Road Link		Road Width (m)	24 Hour AADT Flow	HDV Pop (%)	Mean Vehicle Speed (km/hr)
L1	Amberley Road	6.5	7780.0	0.6	30.0
L2	Amberley Road	7.0	7780.0	0.6	30.0
L3	Amberley Road	6.6	7780.0	0.6	30.0
L4	Amberley Road	10.6	7780.0	0.6	10.0
L5	Fryern Road	5.7	3178.0	0.5	50.0
L6	Fryern Road	5.6	3178.0	0.5	35.0
L7	Fryern Road	5.6	3178.0	0.5	40.0
L8	Fryern Road	6.7	2721.0	2.3	30.0
L9	Fryern Road	5.8	3178.0	0.5	50.0
L10	Fryern Road	6.7	3353.0	2.1	50.0
L11	Fryern Road	6.4	3178.0	0.5	50.0
L12	Fryern Road	5.9	3353.0	2.1	50.0
L13	Fryern Road	7.3	3280.0	1.9	20.0
L14	Fryern Road	6.6	3178.0	0.5	50.0
L15	Fryern Road	6.5	3178.0	0.5	40.0
L16	Fryern Road	8.0	3178.0	0.5	50.0
L17	Fryern Road	5.9	3178.0	0.5	50.0
L18	Fryern Road	7.0	3178.0	0.5	50.0
L19	Fryern Road	5.8	3178.0	0.5	50.0
L20	Fryern Road	5.8	3178.0	0.5	50.0
L21	High Street	10.0	18951.0	1.9	10.0
L22	High Street	8.5	18951.0	1.9	5.0
L23	High Street	8.9	19449.0	1.4	20.0
L24	High Street	7.0	19449.0	1.4	20.0
L25	High Street	7.0	19449.0	1.4	20.0
L26	High Street	7.0	19449.0	1.4	20.0
L27	Manley's Hill	7.0	19792.0	2.1	15.0
L28	Manley's Hill	8.0	19792.0	2.1	30.0
L29	Manley's Hill	6.6	19792.0	2.1	30.0
L30	Manley's Hill	8.5	19792.0	2.1	5.0
L31	Manley's Hill	8.5	19792.0	2.1	30.0
L32	Manley's Hill	8.5	19792.0	2.1	20.0
L33	Manley's Hill	8.5	19792.0	2.1	30.0
L34	Manley's Hill	6.8	19792.0	2.1	30.0
L35	Mill Lane	6.4	2746.0	2.7	30.0
L36	Mill Lane	6.1	2746.0	2.7	30.0
L37	Mill Lane	12.0	2746.0	2.7	10.0
L38	Mill Lane	8.1	2746.0	2.7	30.0
L39	Mill Lane	5.6	2746.0	2.7	30.0

L40	Old Mill Drive	9.8	2746.0	2.7	30.0
L41	Old Mill Drive	6.2	2746.0	2.7	30.0
L42	Old Mill Drive	13.3	2746.0	2.7	20.0
L43	Old Mill Drive	7.5	2746.0	2.7	30.0
L44	Old Mill Drive	7.5	2746.0	2.7	30.0
L45	Old Mill Drive	7.5	2746.0	2.7	30.0
L46	Pulborough Road	6.0	11669.0	0.8	40.0
L47	Pulborough Road	8.4	11669.0	0.8	30.0
L48	Pulborough Road	6.8	11669.0	0.8	40.0
L49	Pulborough Road	8.9	11669.0	0.8	40.0
L50	Pulborough Road	10.8	11669.0	0.8	10.0
L51	Pulborough Road	8.7	11669.0	0.8	30.0
L52	School Hill	6.3	7159.0	0.9	39.6
L53	School Hill	6.5	7159.0	0.9	25.0
L54	School Hill	8.5	7281.0	0.9	5.0
L55	School Hill	7.0	7281.0	0.9	10.0
L56	School Hill	6.0	7281.0	0.9	20.0
L57	School Hill	6.0	7281.0	0.9	27.9
L58	School Hill	5.9	7159.0	0.9	36.8
L59	School Hill	7.2	7159.0	0.9	36.5
L60	School Hill	5.7	7159.0	0.9	38.9
L61	School Hill	5.9	7159.0	0.9	38.5
L62	Site Access	7.0	0.0	0.0	35.0
L63	Site Access	7.0	0.0	0.0	35.0
L64	Site Access	7.0	0.0	0.0	35.0
L65	Thakeham Road	6.6	7787.0	1.5	41.5
L66	Thakeham Road	6.8	7787.0	1.5	44.5
L67	Thakeham Road	7.0	7787.0	1.5	46.7
L68	Thakeham Road	6.4	7787.0	1.5	48.0
L69	Thakeham Road	6.1	7787.0	1.5	46.4
L70	Thakeham Road	6.8	7787.0	1.5	37.0
L71	Thakeham Road	5.9	7787.0	1.5	45.2
L72	Thakeham Road	7.8	7787.0	1.5	46.7
L73	Thakeham Road	6.9	7787.0	1.5	43.9
L74	Thakeham Road	7.5	7787.0	1.5	48.4
L75	Thakeham Road	7.5	7787.0	1.5	32.3
L76	Thakeham Road	7.5	7787.0	1.5	42.4
L77	Thakeham Road	6.2	7787.0	1.5	47.9
L78	Thakeham Road	5.9	7787.0	1.5	45.3
L79	Thakeham Road	6.5	7787.0	1.5	44.2
L80	Thakeham Road	13.8	4636.0	1.5	46.9
L81	Thakeham Road	5.9	4636.0	1.5	49.6

L82	Thakeham Road	6.5	7787.0	1.5	47.2
L83	Thakeham Road	7.7	7787.0	1.5	41.6
L84	The Square	7.0	19449.0	1.4	30.0
L85	Washington Road	7.0	19792.0	2.5	40.0
L86	Washington Road	6.3	19792.0	2.5	40.0
L87	Washington Road	6.4	19792.0	2.5	40.0
L88	Washington Road	8.2	19792.0	2.5	30.0
L89	Washington Road	6.7	19792.0	2.5	40.0
L90	West Street	7.0	19449.0	1.4	30.0
L91	West Street	7.2	19449.0	1.4	10.0
L92	West Street	16.5	19449.0	1.4	10.0
L93	West Street	7.0	19449.0	1.4	20.0
L94	West Street	7.3	19449.0	1.4	30.0
L95	West Street	7.6	19449.0	1.4	20.0
L96	West Street	8.0	19449.0	1.4	20.0
L97	West Street	7.9	19449.0	1.4	30.0

Table B 2: 2028 traffic data

Road Link		DM Scenario		DS Scenario	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L1	Amberley Road	8082.0	0.6	8102.0	0.6
L2	Amberley Road	8082.0	0.6	8102.0	0.6
L3	Amberley Road	8082.0	0.6	8102.0	0.6
L4	Amberley Road	8082.0	0.6	8102.0	0.6
L5	Fryern Road	3425.0	0.5	3489.0	0.5
L6	Fryern Road	3425.0	0.5	3489.0	0.5
L7	Fryern Road	3615.0	0.4	3853.0	0.4
L8	Fryern Road	3071.0	2.1	3250.0	2.0
L9	Fryern Road	3615.0	0.4	3853.0	0.4
L10	Fryern Road	3744.0	2.0	3982.0	1.8
L11	Fryern Road	3615.0	0.4	3853.0	0.4
L12	Fryern Road	3744.0	2.0	3982.0	1.8
L13	Fryern Road	3754.0	1.7	3932.0	1.6
L14	Fryern Road	3615.0	0.4	3853.0	0.4
L15	Fryern Road	3425.0	0.5	3489.0	0.5
L16	Fryern Road	3425.0	0.5	3489.0	0.5
L17	Fryern Road	3425.0	0.5	3489.0	0.5
L18	Fryern Road	3425.0	0.5	3489.0	0.5
L19	Fryern Road	3615.0	0.4	3853.0	0.4
L20	Fryern Road	3425.0	0.5	3489.0	0.5

L21	High Street	19875.0	1.9	19875.0	1.9
L22	High Street	19875.0	1.9	19875.0	1.9
L23	High Street	20206.0	1.4	20255.0	1.4
L24	High Street	20206.0	1.4	20255.0	1.4
L25	High Street	20206.0	1.4	20255.0	1.4
L26	High Street	20206.0	1.4	20255.0	1.4
L27	Manley's Hill	20616.0	2.1	20710.0	2.1
L28	Manley's Hill	20616.0	2.1	20710.0	2.1
L29	Manley's Hill	20616.0	2.1	20710.0	2.1
L30	Manley's Hill	20616.0	2.1	20710.0	2.1
L31	Manley's Hill	20616.0	2.1	20710.0	2.1
L32	Manley's Hill	20616.0	2.1	20710.0	2.1
L33	Manley's Hill	20616.0	2.1	20710.0	2.1
L34	Manley's Hill	20616.0	2.1	20710.0	2.1
L35	Mill Lane	2959.0	2.6	3018.0	2.6
L36	Mill Lane	2959.0	2.6	3018.0	2.6
L37	Mill Lane	2959.0	2.6	3018.0	2.6
L38	Mill Lane	2959.0	2.6	3018.0	2.6
L39	Mill Lane	2959.0	2.6	3018.0	2.6
L40	Old Mill Drive	2959.0	2.6	3018.0	2.6
L41	Old Mill Drive	2959.0	2.6	3018.0	2.6
L42	Old Mill Drive	2959.0	2.6	3018.0	2.6
L43	Old Mill Drive	2959.0	2.6	3018.0	2.6
L44	Old Mill Drive	2959.0	2.6	3018.0	2.6
L45	Old Mill Drive	2959.0	2.6	3018.0	2.6
L46	Pulborough Road	12123.0	0.8	12153.0	0.8
L47	Pulborough Road	12123.0	0.8	12153.0	0.8
L48	Pulborough Road	12123.0	0.8	12153.0	0.8
L49	Pulborough Road	12123.0	0.8	12153.0	0.8
L50	Pulborough Road	12123.0	0.8	12153.0	0.8
L51	Pulborough Road	12123.0	0.8	12153.0	0.8
L52	School Hill	7785.0	0.9	7879.0	0.8
L53	School Hill	7785.0	0.9	7879.0	0.8
L54	School Hill	7911.0	0.9	8005.0	0.8
L55	School Hill	7911.0	0.9	8005.0	0.8
L56	School Hill	7911.0	0.9	8005.0	0.8
L57	School Hill	7911.0	0.9	8005.0	0.8
L58	School Hill	7785.0	0.9	7879.0	0.8
L59	School Hill	7785.0	0.9	7879.0	0.8

L60	School Hill	7785.0	0.9	7879.0	0.8
L61	School Hill	7785.0	0.9	7879.0	0.8
L62	Site Access	0.0	0.0	637.0	0.0
L63	Site Access	0.0	0.0	637.0	0.0
L64	Site Access	0.0	0.0	637.0	0.0
L65	Thakeham Road	8424.0	1.4	8513.0	1.4
L66	Thakeham Road	8424.0	1.4	8513.0	1.4
L67	Thakeham Road	8424.0	1.4	8513.0	1.4
L68	Thakeham Road	8424.0	1.4	8513.0	1.4
L69	Thakeham Road	8424.0	1.4	8513.0	1.4
L70	Thakeham Road	8424.0	1.4	8513.0	1.4
L71	Thakeham Road	8424.0	1.4	8513.0	1.4
L72	Thakeham Road	8424.0	1.4	8513.0	1.4
L73	Thakeham Road	8424.0	1.4	8513.0	1.4
L74	Thakeham Road	8424.0	1.4	8513.0	1.4
L75	Thakeham Road	8424.0	1.4	8513.0	1.4
L76	Thakeham Road	8424.0	1.4	8513.0	1.4
L77	Thakeham Road	8424.0	1.4	8513.0	1.4
L78	Thakeham Road	8424.0	1.4	8513.0	1.4
L79	Thakeham Road	8424.0	1.4	8513.0	1.4
L80	Thakeham Road	4772.0	1.5	5075.0	1.4
L81	Thakeham Road	4772.0	1.5	5075.0	1.4
L82	Thakeham Road	8424.0	1.4	8513.0	1.4
L83	Thakeham Road	8424.0	1.4	8513.0	1.4
L84	The Square	20206.0	1.4	20255.0	1.4
L85	Washington Road	20616.0	2.5	20710.0	2.5
L86	Washington Road	20616.0	2.5	20710.0	2.5
L87	Washington Road	20616.0	2.5	20710.0	2.5
L88	Washington Road	20616.0	2.5	20710.0	2.5
L89	Washington Road	20616.0	2.5	20710.0	2.5
L90	West Street	20206.0	1.4	20255.0	1.4
L91	West Street	20206.0	1.4	20255.0	1.4
L92	West Street	20206.0	1.4	20255.0	1.4
L93	West Street	20206.0	1.4	20255.0	1.4
L94	West Street	20206.0	1.4	20255.0	1.4
L95	West Street	20206.0	1.4	20255.0	1.4
L96	West Street	20206.0	1.4	20255.0	1.4
L97	West Street	20206.0	1.4	20255.0	1.4

APPENDIX C

STREET CANYONS



Table C 1: Modelled street canyon for verification

Road Link		Left (m)			Right (m)		
		Width	Average Building Height	Building Length	Width	Average Building Height	Building Length
L21	High Street	5.00	0.00	0.00	10.00	8.00	16.7
L22	High Street	7.30	8.00	20.00	10.00	9.00	22.00
L23	High Street	4.50	0.00	0.00	7.00	7.90	13.20
L24	High Street	6.10	8.90	23.00	5.00	7.90	16.20
L25	High Street	4.50	7.20	19.0	8.50	7.20	11.90
L26	High Street	0.00	0.00	0.0	10.00	8.00	27.80
L27	Manley's Hill	5.00	7.50	26.5	5.00	5.90	24.70
L30	Manley's Hill	5.55	7.40	14.00	6.50	7.40	7.30
L42	Old Mill Drive	8.55	9.00	23.00	11.50	0.00	0.00
L53	School Hill	4.40	8.00	30.50	4.50	7.60	31.80
L54	School Hill	3.50	0.00	0.0	6.00	7.70	8.10
L55	School Hill	5.80	7.70	20.50	3.50	0.00	0.00
L84	The Square	7.60	8.80	26.50	7.00	8.50	16.50
L90	West Street	5.65	8.20	53.00	5.00	8.10	63.10
L95	West Street	6.85	9.60	26.00	5.50	9.20	31.40

APPENDIX D

MODEL VERIFICATION AND ADJUSTMENT

In order to ensure that ADMS-Roads predicts road NO_x contributions with reasonable accuracy, the model has been verified against local measurements.

The primary verification year was 2025 because it represents the latest year for which a consistent set of local monitoring, traffic and meteorological data was available. Monitoring trends from earlier years were reviewed, but separate verification for those years was not undertaken because directly comparable model inputs were not available.

Model verification has been undertaken using monitoring data from the monitoring sites shown in Table D1. These are the monitoring sites along the local road network with monitoring data for 2025 and met the requirements of verification sites as outlined within LAQM.TG22. The following diffusion tubes were excluded from the verification model:

- Storrington 8, 9, 10 Tri location – excluded due to being co-located with HO4 CMS, which was used instead
- Storrington 14.1 – excluded due to tree branches overhanging the diffusion tube

Storrington 14.1 was excluded because the diffusion tube is positioned beneath overhanging tree branches. The restricted exposure and localised vegetation effects are not represented explicitly within ADMS Roads, and the location is therefore not considered representative of the road dispersion conditions being modelled. The site was initially tested and showed a substantially greater discrepancy than the remaining monitoring locations. Its exclusion was based on representativeness rather than solely on statistical model performance.

The road NO_x contribution at the diffusion tube site has been calculated from total NO₂ concentrations using the 'NO_x to NO₂ calculator' (v 9.1)²⁴, using the assumed background concentration of 8.50 µg/m³ from the nearest urban background monitoring site (Storrington 17n). The 'All other urban UK traffic' option was selected within the NO_x to NO₂ calculator.

The road contribution to total NO_x concentration was calculated from the monitored NO₂ result for use in the verification process. This was undertaken following the methodology contained within LAQM.TG22. The monitored annual mean NO_x concentration and calculated road NO_x concentration are summarised in Table D1.

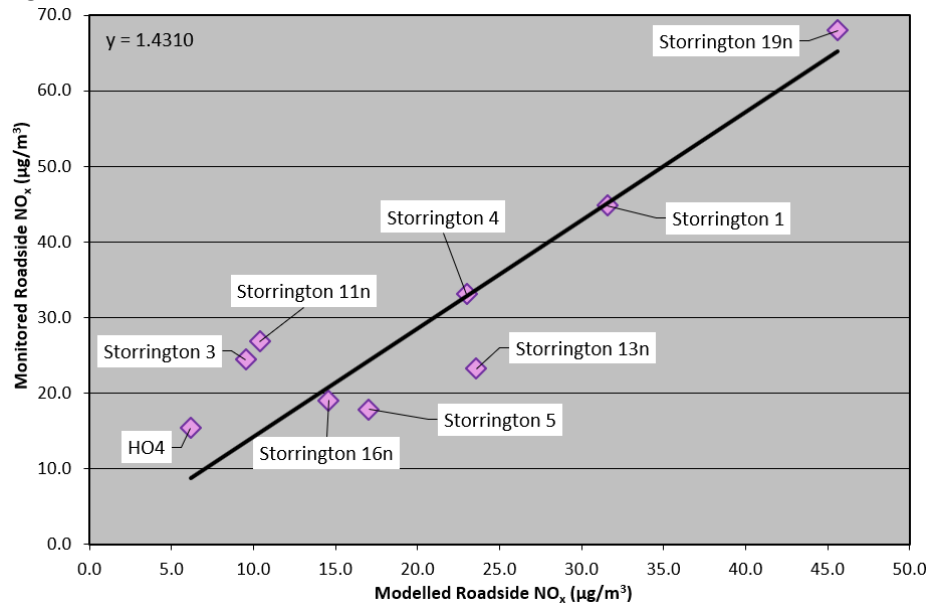
Table D1: Monitored vs modelled road NO_x contribution.

Site ID	Monitored Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)
Storrington 16n	19.01	14.57
Storrington 3	24.42	9.54
Storrington 1	44.81	31.58
Storrington 19n	68.02	45.61
Storrington 4	33.08	22.99
Storrington 5	17.86	17.03
HO4	15.36	6.15
Storrington 13n	23.22	23.57
Storrington 11n	26.84	10.39

The monitored and modelled Road NO_x contribution concentrations were compared, and this indicated that a verification adjustment factor of **1.4310** was required to be applied to NO_x modelling results, as shown in Figure D1.

²⁴ <https://laqm.defra.gov.uk/review-and-assessment/tools/tools.html>

Figure D1: Monitored v Modelled road NO_x for verification



Comparison of the monitored and modelled road NO_x contributions indicates that the model is underpredicting, and the adjustment factor of 1.4310 therefore increases the modelled road NO_x contributions.

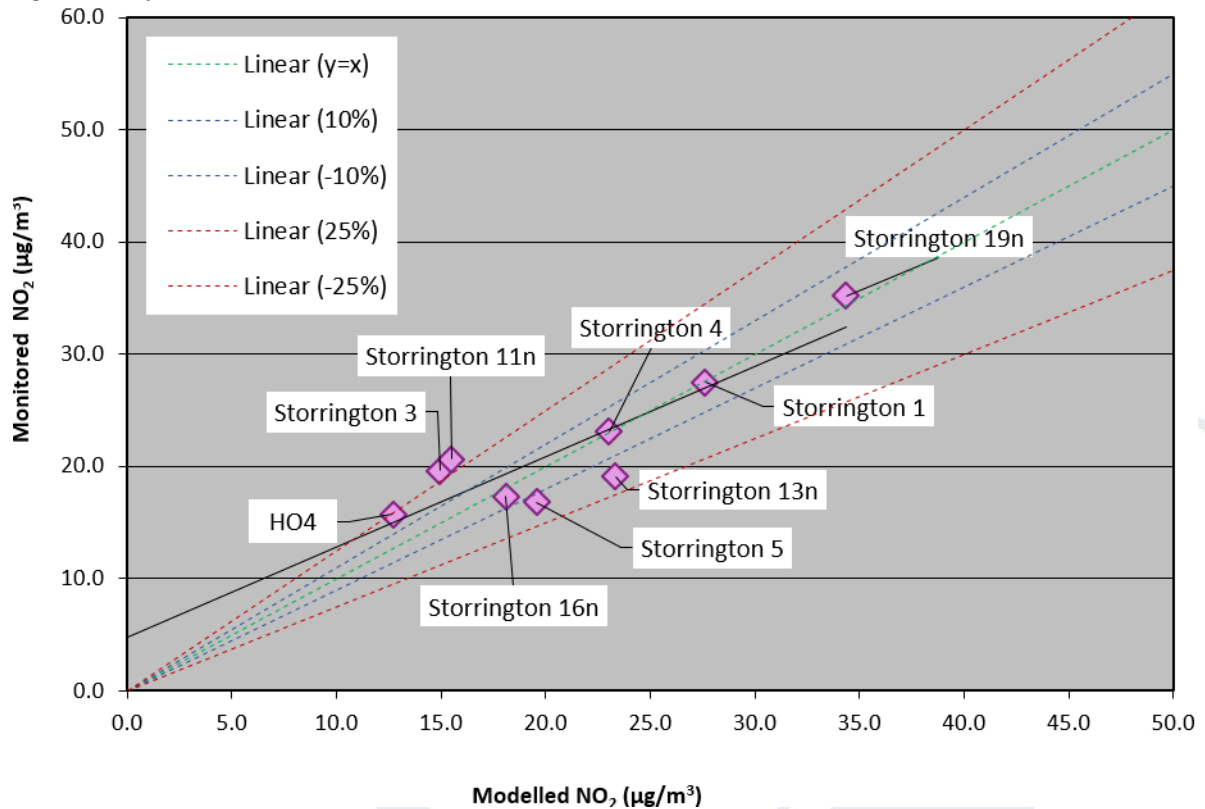
Table D2 presents the monitored and adjusted modelled road NO₂ contributions based on the above verification adjustment factor. The percentage difference has been calculated on total NO₂, that is, the road contribution combined with the background concentrations given above.

Table D2: Verification agreement with monitored results.

Site ID	Monitored Total NO ₂ Concentration (µg/m³)	Adjusted Modelled Total NO ₂ Concentration (µg/m³)	% Difference in total NO ₂
Storrington 16n	17.30	18.10	-4.62%
Storrington 3	19.60	14.94	23.78%
Storrington 1	27.50	27.63	-0.47%
Storrington 19n	35.20	34.35	2.41%
Storrington 4	23.10	23.03	0.30%
Storrington 5	16.80	19.58	-16.55%
HO4	15.70	12.72	18.98%
Storrington 13n	19.10	23.35	-22.25%
Storrington 11n	20.60	15.48	24.85%

As shown in Table D2, the percentage difference between modelled and monitored concentrations is acceptable and is less than 25% in all cases. This reduces uncertainties in the model predictions and provides a robust representation of pollutant concentrations in accordance with the guidance suggested in LAQM.TG22. A graphical representation of Table D2 is shown in Figure D2.

Figure D2: Adjusted modelled vs monitored NO₂



The RMSE calculated from the adjusted total NO₂ concentrations is 3.05 µg/m³, equivalent to 7.64% of the annual mean objective. This is below the ideal value of 4 µg/m³ identified in paragraph 7.587 of LAQM.TG22 and indicates good overall model performance.

In the absence of sufficient suitable monitoring data for verification of the model output for PM₁₀ and PM_{2.5}, the NO_x adjustment factor has also been applied to the modelled road PM₁₀ and PM_{2.5} contributions prior to combining with assumed background concentrations.

The model also had a correlation coefficient of 0.89 and a fractional bias value of 0.03.

APPENDIX E

SENSITIVITY ASSESSMENT

A sensitivity assessment was undertaken using the 2028 traffic forecasts with 2025 vehicle emission factors and 2025 background concentrations. This tests the effect of assuming that the anticipated improvements in fleet emissions and background concentrations between 2025 and 2028 do not occur. All other model inputs, including meteorological data, model geometry and verification adjustment, were unchanged.

The sensitivity assessment predicts higher total concentrations than the principal 2028 assessment. However, no exceedances of the relevant air quality objectives or assessment criteria are predicted. Impacts at existing and consented receptors remain negligible, and concentrations within the Proposed Development remain suitable for residential use. The sensitivity assessment therefore does not alter the overall conclusion that the operational air quality effect is not significant.

Table E1: Summary of 2025 sensitivity assessment

Receptor group	Pollutant	Maximum DS concentration ($\mu\text{g}/\text{m}^3$)	Maximum development change ($\mu\text{g}/\text{m}^3$)	Highest impact descriptor	Exceedance of relevant AQO?	Change from principal conclusion?
Existing	NO ₂	13.81	0.07	Negligible	No	No
	PM ₁₀	11.21	0.03	Negligible	No	No
	PM _{2.5}	6.90	0.02	Negligible	No	No
Proposed	NO ₂	9.06	N/A	Site suitable	No	No
	PM ₁₀	10.45	N/A	Site suitable	No	No
	PM _{2.5}	6.12	N/A	Site suitable	No	No
Consented	NO ₂	8.94	0.22	Negligible	No	No
	PM ₁₀	9.87	0.07	Negligible	No	No
	PM _{2.5}	5.92	0.05	Negligible	No	No

APPENDIX F

SUSSEX AIR QUALITY PARTNERSHIP GOOD DESIGN AND AIR QUALITY VALIDATION CHECKLISTS

Although the Interim Air Quality and Emissions Mitigation Guidance for Sussex (2026) was released post submission of the planning application, the following tables have been included to demonstrate where good air quality design has been considered within the development.

Table F1: Good Design Checklist

Element	Measure	Check	Reason for non-compliance / Where secured in application
Layout	Sensitive uses to be set back, at least, 5m from main road or source of pollution (e.g. car parks), or habitable rooms orientated to be located away from the nearest source of pollution.	☒	
	Avoid creation or worsening of street canyons.	☒	
	Use angled or stepped façades to improve dispersion and airflow.	☒	No significant roadside exposure or street canyon effect has been identified.
	Locate receptors away from clustered emission points.	☒	
	Provide high-quality, permeable pedestrian and cycle connections to minimise reliance on private vehicles.	☐	
Ventilation & Indoor Air Quality	Ventilation strategy draws air from cleaner parts of the site (e.g., rear elevations).	☐	
	Cooking equipment, and kitchens to have appropriate purge ventilation.	☐	
	Enhanced airtightness on polluted or road facing façades, noting that sealed or non-openable windows are not acceptable for residential properties.	☐	
	Targeting BREEAM HEA 02 or equivalent IAQ certification.	☐	Not applicable for residential use
Transport	Development designed to reduce car dominance (e.g., “car-as-guest” layouts, Healthy Streets).	☐	
	Car-free or low-car development included where feasible.	☐	
	Electric Vehicle charge points to be installed in line with local guidance.	☒	1 EV charging space per dwelling
	Facilities provided to support smarter delivery practices (parcel lockers, managed delivery points).	☐	
Cycle Infrastructure	Appropriate secure, weatherproof and convenient to use cycle storage to be provided.	☒	
Welcome Pack	Comprehensive literature on public transport options (locations/timetables etc.) shall be provided to the purchasers of all new dwellings, and users of commercial spaces. Financial contribution towards travel vouchers or cycle equipment for new residential travel plans should also be considered.	☒	
Energy Strategy	Low- or zero-emission heating systems prioritised (ASHP, GSHP; not biomass).	☒	ASHPs proposed
	ASHP/GSHP installation complies with Institute of Acoustics and professional guidance.	☒	
	Combustion-based systems designed for future transition to zero-emission technologies.	☒	Inclusion of EV charging to all dwellings to encourage EV transition
Solid Fuels	No solid fuel (wood or coal) domestic heating appliances or open fireplaces to be provided at any premises.	☒	
Backup Generators	Diesel generators avoided where feasible; cleaner alternatives (gas, solar-battery, fuel cell) considered.	☐	Not applicable
	If diesel required: generator fitted with DPF and SCR systems.	☐	
	Generator and exhaust positioned to minimise exposure to sensitive receptors.	☐	
Green Infrastructure	Green infrastructure used thoughtfully in line with best practice.	☒	
	Trees or bushes to be placed in between a main road and the building to aid dispersion and reduce pollutant concentrations at the façade.	☒	

Odour & Emission Points	Extraction/ventilation discharge points designed to release air at appropriate height and velocity.	☒	
	Odour abatement systems (e.g. carbon filters, electrostatic precipitators) installed where required and properly maintained to ensure ongoing effective performance.	☐	
	Commercial kitchen systems comply with EMAQ+ Odour and Noise Guidance.	☐	Not required for residential scheme
Noise Synergies	Air-quality design aligned with the Planning Noise Advice Document: Sussex.	☐	

Table F2: Air Quality Validation Checklist

CLASSIFICATION			
NOT Major	☐		
Major	☒	56 dwellings	
Based on which trigger criteria?	Over 9 units		
GOOD DESIGN			
Good Design incorporated	☒ Yes	☐ No	
ASSESSMENT			
Local Air Quality Scenario	☒ Yes	☐ No	☐ N/A
Cumulative Impact considered	☒ Yes	☐ No	☐ N/A
PM2.5 Interim Guidance	☒ Yes	☐ No	☐ N/A
Damage Cost	☒ Yes	☐ No	☐ N/A
Calculation Details	☒ Yes	☐ No	☐ N/A
MITIGATION			
Evidence of minimising emissions	☒ Yes	☐ No	☐ N/A
Minimising exposure/maximising dispersion	☒ Yes	☐ No	☐ N/A
Compliance with policy	☒ Yes	☐ No	☐ N/A
Compliance with limits	☒ Yes	☐ No	☐ N/A
Compliance Damage Cost calculation	☒ Yes	☐ No	☐ N/A
Mitigation Measures listed and costed	☒ Yes	☐ No	☐ N/A
Construction Environmental Management Plan	☐ Yes	☐ No	☒ N/A*

*CEMP will be secured by planning condition