



Air Quality Assessment	
Status Park, Hillingdon	
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1 Introduction

1.1. Proposed Development

1.1.1 Air Quality Assessments Ltd (AQA) has been commissioned by MBH Heathrow Ltd to undertake an air quality assessment for the proposed residential development at Land at Status Park, Nobel Drive, Hillingdon, UB3 5EY. The application site is shown in **Figure 1 on Page 10**. The proposed development is described as follows:

“Erection of a residential building together with associated landscaping and car parking, and including the reconfiguration of the Vista Court, Atlantico House and Peninsula House residential car parks on Nobel Drive.”

1.2. Scope of Assessment

1.2.1 This report describes the existing air quality conditions in proximity to the site. Hillingdon Council has declared an AQMA for exceedances of the annual mean nitrogen dioxide (NO₂) objective and the application site lies within that area.

1.2.2 Planning consent has been granted for a hotel at the application site. The proposed development would lead to a net reduction in traffic on local roads of minus 112 daily vehicle trips; therefore, the impacts on local air quality due to emissions from traffic generated by the proposed development have been screened out of the assessment.

1.2.3 The new residential properties will be subject to the impacts of road traffic emissions from the adjacent road network, and this has been assessed. The main air pollutants of concern related to traffic emissions are NO₂ and fine particulate matter (PM₁₀ and PM_{2.5}).

1.2.4 There is also the potential for construction activities to impact upon existing properties. The main pollutants of concern related to construction activities are dust and PM₁₀.

1.2.5 Heat and hot water at the proposed development will be provided using an air source heat pump (ASHP) system. The proposed development would not lead to an increase in motor vehicle movements and would result in a net reduction in traffic when compared to the consented land use. London Plan Guidance, Air Quality Neutral, includes the following statement in the section on Excluded Development (GLA, 2023):

“Developments, including major developments, that do not include additional emissions sources are assumed to be Air Quality Neutral and to meet the Air Quality Neutral benchmarks. As such, there is no need to do an AQN Assessment. This would include, for example, developments that have no additional motor vehicle parking, do not lead to an increase in motor vehicle movements, and do not include new combustion plant such as gas-fired boilers.”

Therefore, the proposed development is Air Quality Neutral with regard to buildings and transport emissions. However, the Air Quality Neutral guidance also states:

“In certain cases, such as developments in an Air Quality Focus Area, the local planning authority may require a full air quality assessment for a minor development due to the nature or location of the proposed scheme. In these cases, the Full procedure for the

Building Emissions Benchmark (BEB) and the Full procedure for the Transport Emissions Benchmark (TEB) should be used in the AQN Assessment."

Therefore, a full Air Quality Neutral Assessment has been completed with regards transport emissions, based on the level of vehicle trips generated by the proposed development.

- 1.2.6 The assessment has been prepared taking into account all relevant local and national guidance and regulations.
- 1.2.7 The references and a glossary of common air quality terminology used in this assessment are shown in **Section 10** and **Section 11** respectively.

2 Air Quality Legislation and Policy

2.1. Air Quality Legislation

2.1.1 The Air Quality Standards Regulations 2010 (as amended) set legally binding limit values for concentrations of major air pollutants in outdoor air that impact public health, including NO₂, PM₁₀ and PM_{2.5} (The Stationary Office, 2010). Limit values apply at all locations, apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway. The limit values for PM₁₀ and NO₂ applied from 2005 and 2010 respectively, whereas the PM_{2.5} limit value applied from 2020.

2.1.2 Part IV of The Environment Act 1995, as amended by the Environment Act 2021, requires the UK Government to prepare a national Air Quality Strategy. A new Air Quality Strategy for England was published in April 2023 (Defra, 2023a). The Air Quality Strategy sets out the actions that Defra expects local authorities to take in support of long-term air quality goals, including new PM_{2.5} targets, and provides a framework to enable local authorities to make the best use of their powers and make improvements for their communities.

2.1.3 The strategy sets out air quality standards and objectives intended to protect human health and the environment. Standards are the concentrations of pollutants in the atmosphere, below which there is a minimum risk of health effects or ecosystem damage; they are set with regard to scientific and medical evidence. Objectives are the policy targets set by the Government, taking account of economic efficiency, practicability, technical feasibility and timescale, where the standards are expected to be achieved by a certain date. The Government has also published a Clean Air Strategy, which provides an overview of the actions that the government will take to improve air quality (Defra, 2019). The actions in the Clean Air Strategy focus on emissions from transport, the home, farming, and industry.

2.1.4 The Air Quality Strategy also describes the system of Local Air Quality Management (LAQM), which was introduced in Part IV of the Environment Act 1995. LAQM requires every local authority to carry out regular review and assessments of air quality in its area. Where an objective has not been, or is unlikely to be achieved, the local authority must declare an Air Quality Management Area (AQMA) and prepare an action plan which sets out appropriate measures to be introduced in pursuit of the objectives. PM_{2.5} is not included in the LAQM framework; however, the government expects all local authorities to effectively use their powers to reduce PM_{2.5} emissions from the sources which are within their control.

2.1.5 The objectives for NO₂ and PM₁₀, as prescribed by the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002, are shown in **Table 1** (The Stationary Office, 2000; The Stationary Office, 2002). The objectives for NO₂ and PM₁₀ are the same as the limit values, but with differing compliance dates. The objectives for PM₁₀ and NO₂ were to have been achieved by 2004 and 2005 respectively and continue to apply in all future years thereafter.

2.1.6 The air quality limit value for PM_{2.5} is also shown in **Table 1**. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 set out two legally

binding targets for PM_{2.5}, with interim targets for each set out in the Environmental Improvement Plan 2023 (The Stationery Office, 2023; Defra, 2023b). The PM_{2.5} targets are:

- 10 µg/m³ annual mean concentration PM_{2.5} nationwide by 2040, with an interim target of 12 µg/m³ by January 2028; and
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

Table 1: The Objectives for NO₂ and PM₁₀ and the PM_{2.5} Limit Value

Pollutant	Concentration Measured As	Objective/Limit Value
NO ₂	1-hour Mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
PM ₁₀	24-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
PM _{2.5}	Annual Mean	20 µg/m ³

2.1.7 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the London Local Air Quality Management Technical Guidance (Mayor of London, 2019). The annual mean NO₂ and PM₁₀ objectives should apply at the building façades of residential properties, schools, hospitals, care homes etc.; they should not apply at the building façades of places of work, hotels, gardens or kerbside sites. The 24-hour mean PM₁₀ objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels. The 1-hour mean NO₂ objective should apply at all locations where the annual and 24-hour mean objectives apply, as well as at kerbside sites where the public have regular access, e.g., the pavements of busy shopping streets.

2.2. Planning Policy

National Policies

2.2.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied (Department for Levelling Up, Housing and Communities, 2023). It provides a framework within which locally prepared plans for development can be produced. At Paragraph 8c, the NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development and includes an overarching environmental objective:

"To protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

2.2.2 With regard to environmental impacts from traffic, at Paragraph 108 the NPPF states that:

“Transport issues should be considered from the earliest stages of plan-making and development proposals, so that: ...

d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; ...”

2.2.3 The NPPF also states at Paragraph 180 that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by: ...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; ...”

2.2.4 The NPPF goes on to state at Paragraph 191:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.”

2.2.5 With specific reference to air quality, the NPPF states at Paragraph 192 that:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

2.2.6 The NPPF also includes the following statement at Paragraph 194:

“The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

2.2.7 The NPPF is supported by Air Quality national Planning Practice Guidance (nPPG) (Department for Levelling Up, Housing and Communities, 2019). The PPG states that:

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with relevant Limit Values. It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified."

2.2.8 The nPPG goes on to state that:

"Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity."

2.2.9 The nPPG also sets out the information that may be required in an air quality assessment, stating that:

"Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific."

2.2.10 It also provides guidance on options for mitigating air quality impacts, and makes clear that:

"Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact."

2.2.11 The nPPG makes clear that:

"... dust can also be a planning concern, for example, because of the effect on local amenity."

Regional Policies

2.2.12 The London Plan sets out the spatial development strategy for London and presents a London-wide policy framework, including Policy SI1 Improving Air Quality, which states (GLA, 2021a):

"A Development Plans, through relevant strategic, site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality."

B To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

1) Development proposals should not:

a) lead to further deterioration of existing poor air quality

- b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
 - c) create unacceptable risk of high levels of exposure to poor air quality.
- 2) In order to meet the requirements in Part 1, as a minimum:
 - a) development proposals must be at least Air Quality Neutral
 - b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures
 - c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
 - d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

C Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:

- 1) how proposals have considered ways to maximise benefits to local air quality, and
- 2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

D In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.

E Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development."

2.2.13 The Mayor's London Environment Strategy sets out objectives, policies and proposals that will improve air quality in London, with the aim of reducing exposure of Londoners to harmful pollution, achieving compliance with the EU limit values as soon as possible and establishing and achieving tighter air quality targets (GLA, 2018). Proposals include improving information about air quality, encouraging new developments to take into account local air quality, maintaining the LAEI and monitoring networks, promoting and prioritising sustainable transport modes, phasing out the use of fossil fuels with the aim of a zero emissions transport system, tackling unnecessary idling, and reducing emissions from engines and plant.

Local Policies

2.2.14 The Hillingdon Local Plan Part 1 Strategic Policies includes Policy EM8: Land, Water, Air and Noise, the relevant parts of which state (Hillingdon Council, 2012):

“All development should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.

All major development within the Air Quality Management Area (AQMA) should demonstrate air quality neutrality (no worsening of impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increased provision for vehicles with cleaner transport fuels; deliver increased planting through soft landscaping and living walls and roofs; and provide a management plan for ensuring air quality impacts can be kept to a minimum.

The Council seeks to reduce the levels of pollutants referred to in the Government’s National Air Quality Strategy and will have regard to the Mayor’s Air Quality Strategy. London Boroughs should also take account of the findings of the Air Quality Review and Assessments and Actions plans, in particular where Air Quality Management Areas have been designated.

The Council has a network of Air Quality Monitoring stations but recognises that this can be widened to improve understanding of air quality impacts. The Council may therefore require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements.”

2.2.15 The Hillingdon Local Plan Part 2 Development Management Policies includes Policy DMEI 14: Air Quality, which states (Hillingdon Council, 2020):

A) Development proposals should demonstrate appropriate reductions in emissions to sustain compliance with and contribute towards meeting EU limit values and national air quality objectives for pollutants.

B) Development proposals should, as a minimum:

i) be at least “air quality neutral”;

ii) include sufficient mitigation to ensure there is no unacceptable risk from air pollution to sensitive receptors, both existing and new; and

iii) actively contribute towards the improvement of air quality, especially within the Air Quality Management Area.”

Air Quality Action Plan

2.2.16 Hillingdon Council have published an Air Quality Action Plan (Hillingdon Council, 2019). The action plan sets out actions that Hillingdon Council intend to pursue in order to improve air quality in Hillingdon.

3 Methodology

3.1. Existing Conditions

3.1.1 Information on existing air quality within the study area has been collated from the following sources:

- The results of monitoring and the LAQM Air Quality Annual Status Reports undertaken by Hillingdon Council (Hillingdon Council, 2023); and
- Background pollutant concentration maps published by Defra (Defra, 2024a). These cover the whole country on a 1 x 1 km grid.

3.2. Construction Impacts

3.2.1 A construction dust risk assessment has been undertaken following the guidance in the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014).

3.2.2 The guidance divides activities on construction sites into four main types: demolition, earthworks, construction and trackout. The methodology is based on a sequence of steps. Step 1 screens the requirement for more detailed assessment; if there are no receptors within 50 m of the site boundary, or within 50 m of roads used by construction vehicles, then there is no need for further assessment. Step 2 assesses the risk of dust impacts from each of the four activities, considering the scale and magnitude of the works (Step 2A), and the sensitivity of the area (Step 2B). Site-specific mitigation for each of the four activities is then determined based on a dust risk category defined at Step 2C. **Appendix A1** sets out the construction dust assessment methodology in more detail.

3.3. Road Traffic Impacts

Modelling Methodology

3.3.1 Concentrations have been predicted using the ADMS Roads (v5.0.1.3) dispersion model (CERC, 2024). The model requires the input of a range of data, details of which are provided in **Appendix A2**, along with details of the model verification calculations.

Sensitive Locations

3.3.2 Receptors have been identified at the façade of the proposed development, where there is relevant exposure to the air quality objectives and where the impact from existing sources is likely to be greatest. The receptors are described in **Table 2** and are shown in **Figure 1**. Concentrations have been modelled at receptor heights of 1.5m and 4.5m to represent exposure at the ground and first-floor levels respectively.

Assessment Scenarios

3.3.3 Concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted at the receptors assuming an opening year of 2026.

Table 2: Description of Receptors

Receptor	Location	OS Grid Ref		Height (m)
		X	Y	
R1	Development Façade	509148.9	176947.4	1.5 & 4.5
R2	Development Façade	509148.9	176932.6	1.5 & 4.5
R3	Development Façade	509189.8	176932.6	1.5 & 4.5
R4	Development Façade	509196.2	176939.7	1.5 & 4.5
R5	Development Façade	509203.3	176972.2	1.5 & 4.5

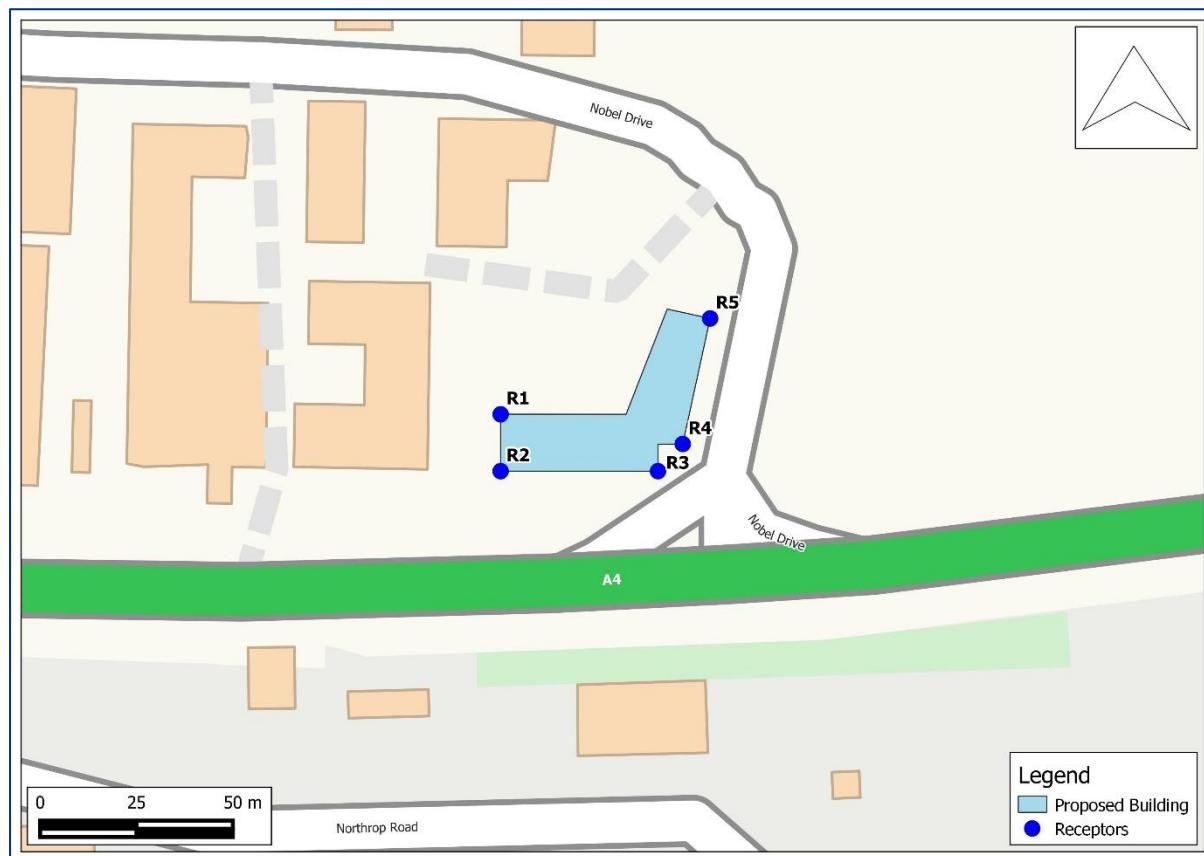


Figure 1: Location of Receptors

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Uncertainty

3.3.4 There are many factors that contribute to uncertainty when predicting pollutant concentrations. The emission factors utilised in the air quality model are dependent on traffic data, which have inherent uncertainties associated with them. There are also uncertainties associated with the model itself, which simplifies real world conditions into a series of algorithms. The model verification process, as described in **Appendix A2**, minimises the uncertainties; however, future year predictions use

projected traffic data, emissions data, and background concentrations. The most recent emission factors and background data have been used in this assessment.

3.4. Assessment Criteria and Significance

Construction Dust

3.4.1 The London Plan SPG on The Control of Dust and Emissions During Construction and Demolition is clear that the primary aim of the risk assessment is to identify site specific mitigation that, once adopted, will ensure that there will be no significant effect. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

Health Criteria

3.4.2 There is no official guidance in the UK on how to describe air quality impacts, nor how to assess their significance. The approach suggested by Environmental Protection UK (EPUK) and the IAQM in guidance on Land-Use Planning & Development Control: Planning for Air Quality has been used for this assessment (EPUK and IAQM, 2017).

3.4.3 A predicted exceedance of an air quality assessment level (AQAL) will be considered as significant, unless provision is made to reduce the exposure by some other means. Predicted concentrations below the AQALs will be considered as insignificant.

3.4.4 The AQAL for NO_2 is $40\mu\text{g}/\text{m}^3$, based on the annual mean objective, as shown in **Table 1**.

3.4.5 The AQAL for PM_{10} is an annual mean concentration of $32\mu\text{g}/\text{m}^3$ as measured data show that the 24-hour PM_{10} objective could be exceeded where annual mean concentrations are above $32\mu\text{g}/\text{m}^3$ (Mayor of London, 2019).

3.4.6 The AQAL for $\text{PM}_{2.5}$ is $20\mu\text{g}/\text{m}^3$, based on the annual mean air quality limit value.

3.4.7 The legally binding $\text{PM}_{2.5}$ target value of $10\mu\text{g}/\text{m}^3$ does not need to be achieved until 2040; however, an assessment of whether the proposed development would hinder progress towards the target value has been undertaken by comparing predicted 2026 annual mean $\text{PM}_{2.5}$ concentrations with the $12\mu\text{g}/\text{m}^3$ 2028 interim annual mean target value.

3.4.8 The determination of the significance of the effects includes elements of professional judgement and the professional experience of the consultant preparing the report is set out in **Appendix A3**.

3.5. Air Quality Neutral Assessment

3.5.1 To enable the implementation of the Air Quality Neutral policy of the London Plan, emission benchmarks have been developed for buildings and transport, which are dependent on the area of London that the development is in. Developers are required to calculate emissions due to buildings operation and rip rates for transport, and to compare these with the benchmarks. Full details of the Air Quality Neutral assessment method are set out in the Air Quality Neutral London Plan Guidance (GLA, 2023).

3.5.2 The proposed development will not use gas, or any other combustion source, for heat or hot water and will be Air Quality Neutral with regard to building emissions.

3.5.3 Mayer Brown Limited, the Transport Consultants working in support of the proposed development, have provided an estimate of the light vehicle trips generated by the proposed development. Only car or light van trips undertaken directly by the development occupiers should be used for the Air Quality Neutral assessment.

3.5.4 The trip rate for the proposed development has been compared with the Air Quality Neutral benchmark trip rates for residential use, as set out in **Table 3**. The proposed development is located in Outer London and the relevant benchmark trip rate is 447 annual trips/dwelling. The number of dwellings at the proposed development is multiplied by the benchmark trip rate to determine the transport emissions benchmark (TEB). If the development trip rate is lower than the TEB, the proposed development is Air Quality Neutral with regard to transport emissions.

Table 3: Benchmark Trip Rates

Land Use	Benchmark Trip Rates (Annual Trips/Dwelling)		
	Central Activities Zone (CAZ)	Inner London (Excluding CAZ)	Outer London
Residential	68	114	447

4 Baseline Conditions

4.1. LAQM Review and Assessment

- 4.1.1 Hillingdon Council has declared an AQMA for exceedances of the annual mean NO₂ objective that covers the area from the southern boundary north to the border defined by, the A40 corridor from the western borough boundary, east to the intersection with the Yeading Brook north until its intersection with the Chiltern-Marylebone railway line.
- 4.1.2 In terms of PM₁₀, Hillingdon Council has concluded that there are no exceedances of the objectives; therefore, it is highly unlikely concentrations in the vicinity of the application site exceed the objectives.

4.2. Local Air Quality Monitoring

- 4.2.1 Hillingdon Council operates 12 automatic monitoring sites across the borough and an NO₂ diffusion tube monitoring network. Data from monitoring sites located within 1km of the application site, or used for model verification, are shown in **Table 4**, **Table 5**, **Table 6** and **Table 7**, with the monitoring locations shown in **Figure 2**.
- 4.2.2 Measured annual mean roadside NO₂ concentrations ranged from 22 to 48.7 µg/m³ between 2015 and 2022, with exceedances measured at the Oxford Avenue roadside automatic monitoring site in 2016, at diffusion tube monitoring sites HILL10 and HILL25 in 2017, at sites HILL38, HILL39 and HILL41 in 2019 and at site HILL41 in 2022. There has been an overall decreasing trend in annual mean NO₂ concentrations, and in 2022 there was just one marginal exceedance of the annual mean objective at site HILL41, where the concentration was 40.1 µg/m³.
- 4.2.3 High annual mean NO₂ concentrations have been measured within Heathrow Airport close to the runway at automatic monitoring site LHR2.
- 4.2.4 The low concentrations measured in 2020 and 2021 were likely to be due to travel restrictions brought in to control the Covid-19 pandemic; however, concentrations in 2022 remained lower than in 2019 after travel restrictions ended.
- 4.2.5 Measurements across the UK have shown that there is a risk of exceedances of the 1-hour mean nitrogen dioxide objective where the annual mean concentration is above 60 µg/m³; therefore, it is unlikely that the 1-hour mean objective has been exceeded at any of the diffusion tube monitoring sites. No exceedances of the 1-hour mean NO₂ limit value have been measured at the automatic monitoring sites.
- 4.2.6 Measured PM₁₀ and PM_{2.5} concentrations have remained well below the objectives/limit values at the automatic monitoring sites.

4.3. Background Concentrations

- 4.3.1 Estimated background concentrations at the application site are shown in **Table 8**. The background concentrations have been derived from data in the national maps published by Defra. The background concentrations are all well below the objectives.

Table 4: Measured Annual Mean NO₂ Concentrations ^a

Site ID	Location	Site Type ^b	Annual Mean (µg/m ³)								
			2015	2016	2017	2018	2019	2020	2021	2022	
Automatic Monitor											
LHR2	London Heathrow	A	44.2	47.0	48	43	42	25	25	30	
HI3	Oxford Avenue	R	34.5	41.9	35	35	33	22	25	29	
LHRBR	Bath Road	R	-	-	-	-	-	-	34	36	
Diffusion Tubes											
HILL09	25 Cranford Lane	R	35.6	35.5	39.4	37.2	36.4	23.8	24.5	28.8	
HILL10	Brendan Close	R	37.2	34.2	47.5	39.6	39.7	25.2	26.4	28.3	
HILL25	10 West End Lane	B	37	37.4	45.6	39.3	38.7	28.3	28.5	32.8	
HILL38	Bath Road	R	-	-	-	-	44.0	33.0	28.9	35.6	
HILL39	Pinglestone Close Bath Road	R	-	-	-	-	45.7	29.2	29.1	37.1	
HILL41	Bath Road	R	-	-	-	-	48.7	31.8	32.9	40.1	
Objective			40								

a Exceedances are shown in bold.

b R = Roadside, B = Background, A = Airport.

Table 5: Exceedance Statistics for the 1-hour Mean NO₂ Objective

Site ID	Location	Site Type ^a	Number of Hours > 200 µg/m ³								
			2015	2016	2017	2018	2019	2020	2021	2022	
LHR2	London Heathrow	A	2	8	12	0	1	0	0	0	
HI3	Oxford Avenue	R	2	0	1	0	0	0	0	0	
LHRBR	Bath Road	R	-	-	-	-	-	-	0	0	
Objective			18								

a R = Roadside, A = Airport.

Table 6: Summary of PM₁₀ Monitoring Data

Site ID	Location	Site Type ^a	2015	2016	2017	2018	2019	2020	2021	2022
Annual Mean (µg/m³)										
LHR2	London Heathrow	A	13	15	15	14	13	11	11	13
HI3	Oxford Avenue	R	21	20	19	24	24	23	20	22
LHRBR	Bath Road	R	-	-	-	-	-	-	14	16
Objective		40								
Number of Days > 50 µg/m³										
LHR2	London Heathrow	A	3	3	7	1	6	0	0	2
HI3	Oxford Avenue	R	3	11	4	2	4	6	0	1
LHRBR	Bath Road	R	-	-	-	-	-	-	0	4
Objective		35								

a R = Roadside, A = Airport.

Table 7: Measured Annual Mean PM_{2.5} Concentrations

Site ID	Location	Site Type ^a	2016	2017	2018	2019	2020	2021	2022
LHR2	London Heathrow	A	10	9	8	9	7	7	8
LHRBR	Bath Road	R	-	-	-	-	-	8	9
Limit Value		20							

a R = Roadside, A= Airport.

Table 8: Estimated Annual Mean Background Concentrations (µg/m³)

Year	NO ₂	PM ₁₀	PM _{2.5}
2022	35.2	15.3	10.5
2026	33.8	14.7	10.1
Objective/Limit Value	40	40	20

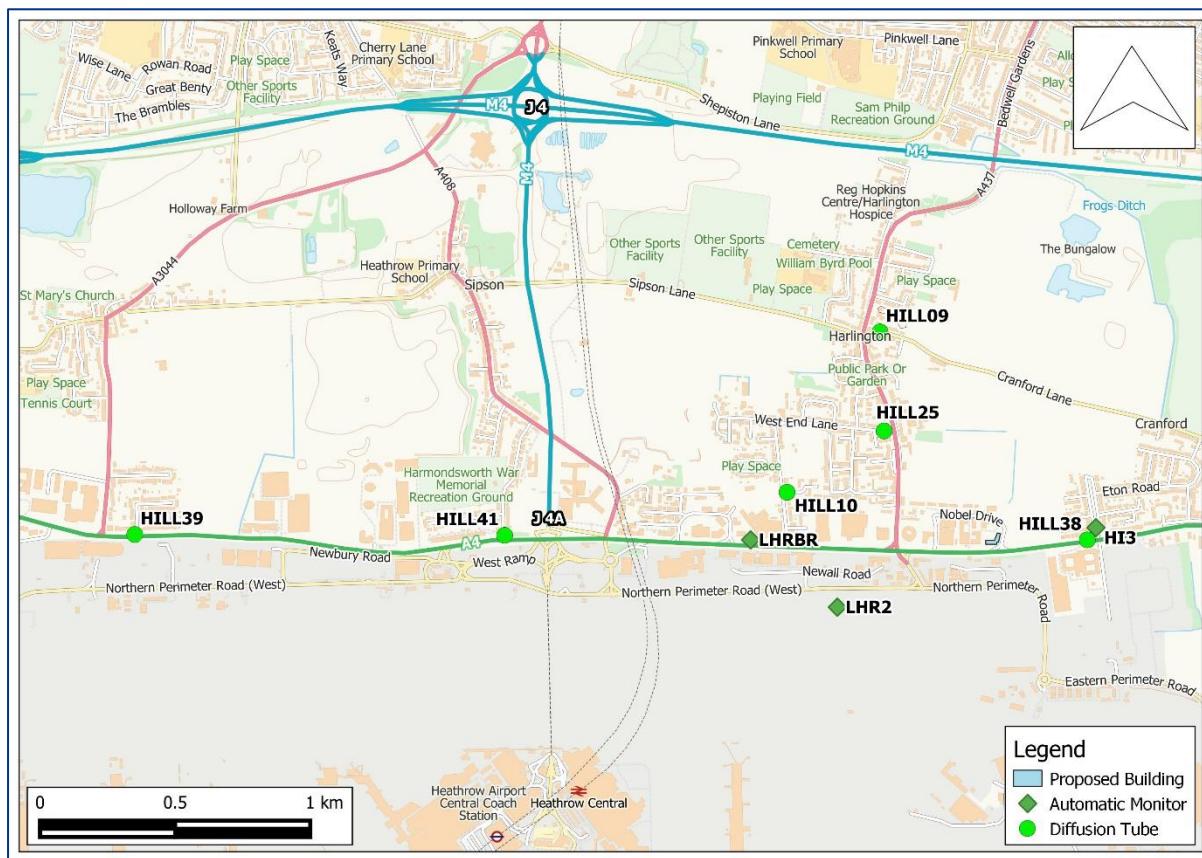


Figure 2: Air Quality Monitoring Sites

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5 Impact Assessment

5.1. Construction Phase

5.1.1 Without mitigation, there is a risk that the construction phase of the development will lead to dust soiling and elevated concentrations of PM₁₀. These impacts may occur during demolition, earthworks and construction, as well as from track-out of dust onto the public highway, as vehicles leave the construction site.

Screening

5.1.2 There are dust sensitive human receptors within 50 m of the application site in all directions. There are also receptors within 50 m of the route used by construction vehicles on the public highway, up to 500 m from the site entrance. Therefore, further assessment of the construction phase impacts on human receptors is necessary and a risk assessment has been undertaken below. There are no dust sensitive ecological receptors within 50m, and this element will not be considered further.

Risk of Dust Impacts

Potential Dust Emission Magnitude

5.1.3 No demolition is required at the application site; therefore, the effects due to demolition during the construction phase are not considered further.

5.1.4 An area of less than 2,500m² May be affected by earthworks. Data from the UK Soil Observatory have been used to determine that the soil at the site is a medium to light (silty) to heavy with a clay to clayey loam texture which may be prone to suspension when dry (NERC, 2024). Based on the example definitions in **Table A1 of Appendix A1**, the dust emission class for earthworks is considered to be small.

5.1.5 The proposed development involves the construction of buildings with a volume of less than 25,000m³. Based on the example definitions in **Table A1 of Appendix A1**, the dust emission class for construction is considered to be small.

5.1.6 The number of daily outward heavy-duty vehicle (HDV) movements from the application site during the construction phase is likely to be less than 10. Based on the example definitions in **Table A1 of Appendix A1**, the dust emission class for trackout is considered to be small.

5.1.7 A summary of the likely dust emission magnitudes is shown in **Table 9**.

Table 9: Likely Dust Emission Magnitudes

Source	Dust Emission Magnitude
Demolition	n/a
Earthworks	Small
Construction	Small
Trackout	Small

Sensitivity of the Area

5.1.8 The sensitivity of the area depends on the specific sensitivities of local receptors, the proximity and number of receptors, local PM₁₀ background concentrations and other site-specific factors, e.g., natural screening by trees.

Sensitivity of the Area to Dust Soiling

5.1.9 The Atlantico House residential block to the north of the application site is considered to be a high sensitivity receptors to dust soiling, whereas the office block to the west is a medium sensitivity receptor (see **Table A2 of Appendix A1**). There are no dwellings within 20m of construction work, but likely to be between 10-100 dwellings within 50m; therefore, with reference to **Table A5 of Appendix A1**, the area is considered to be of medium sensitivity to dust soiling from on-site works.

5.1.10 **Table 9** shows that the dust emission magnitude for trackout is small, therefore there is a risk of material being tracked up to 50 m from the site exit. There may be between 10-100 residential properties within 50 m of the edge of the road along which material could be tracked; therefore, with reference to **Table A5 of Appendix A1**, the area is thus considered to be of high sensitivity to dust soiling from track-out.

Sensitivity of the Area to the Health Effects of PM₁₀

5.1.11 Residential properties are considered to be 'high' sensitivity receptors to the health effects of PM₁₀ (see **Table A3 of Appendix A1**). The 2022 annual mean PM₁₀ concentration predicted at the façade of the proposed development furthest from Bath Road (R5), where concentrations will be similar to those at the existing residential receptors, is 18.9 µg/m³. Therefore, with reference to **Table A6 of Appendix A1**, the area is described to be of low sensitivity to the health effects of PM₁₀ during on-site works and from track-out.

5.1.12 A summary of the sensitivity of the area to the effects of the construction works is shown in **Table 10**.

Table 10: Summary of the Area Sensitivity

Potential Effect	Sensitivity of the Area	
	On-site Works	Trackout
Dust Soiling	Medium	High
Health	Low	Low

Risk of Impact and Significance

5.1.13 The dust emission magnitudes in **Table 9** have been combined with the area sensitivities in **Table 10** and a risk category has been assigned to each construction activity using the matrix in **Table A8 of Appendix A1**. The resultant risk categories, shown in **Table 11**, have then been used to determine the appropriate level of mitigation necessary for a residual effect that is likely to be 'not significant'.

Table 11: Summary of the Risk of Impacts Without Mitigation

Construction Activity	Dust Soiling	Health
Demolition	n/a	n/a
Earthworks	Low	Negligible
Construction	Low	Negligible
Trackout	Low	Negligible

5.2. Road Traffic Impacts

5.2.1 Predicted concentrations of NO₂, PM₁₀ and PM_{2.5} at the ground and first-floor façade of the proposed development are shown in **Table 12**. Annual mean concentrations are predicted to be below the AQALs at all the receptors. Therefore, air quality at the proposed development will be acceptable and the application site is suitable for residential use.

5.2.2 Annual mean PM_{2.5} concentrations in 2026 are higher than the 2028 interim target value of 12 $\mu\text{g}/\text{m}^3$ at receptors R1 to R4; however, with concentrations decreasing into the future, the proposed development is unlikely to hinder progress towards achieving the legally binding 10 $\mu\text{g}/\text{m}^3$ 2040 target value.

Table 12: Predicted Impacts on the Proposed Development in 2026

Receptor	Annual Mean ($\mu\text{g}/\text{m}^3$)					
	NO ₂		PM ₁₀		PM _{2.5}	
	1.5m	4.5m	1.5m	4.5m	1.5m	4.5m
R1	34.5	34.4	19.9	19.1	12.8	12.3
R2	34.9	34.6	22.3	20.4	14.0	13.1
R3	34.9	34.6	22.7	20.6	14.3	13.2
R4	34.7	34.5	21.2	19.9	13.5	12.8
R5	34.2	34.2	18.1	17.8	11.9	11.7
AQAL	40		32		20	

5.3. Air Quality Neutral Assessment

Transport Emissions

5.3.1 The calculation of the TEB is shown in **Table 13** and the calculation of the annual development trips is shown in **Table 14**. Annual development trips are higher than the TEB; therefore, mitigation is considered in **Section 6**.

Table 13: Calculation of TEB

Land Use	Number of Dwellings	Benchmark Trip Rate (trips/yr)	TEB (trips/yr)
Residential	51	6.5	22,797

Table 14: Development Trips

Land Use	Occupier Light Vehicle Trips ^a	Annual Development Trips
Residential	72	26,280

a Total light vehicle trips of 84 minus 12 servicing trips.

6 Mitigation

6.1. Construction Phase

6.1.1 The application site has been identified as a low-risk site overall due to dust soiling, and a negligible risk site for health effects, as set out in **Table 11**. The dust risk category has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The mitigation measures, taken from the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014), are described in **Appendix A4**.

6.1.2 The mitigation measures will be included in an Air Quality and Dust Management Plan (AQDMP), which can be secured by condition to the planning permission and provided prior to commencement of work on the site.

6.2. Operational Phase

6.2.1 The assessment has demonstrated that the scheme will not introduce receptors into an area where the objectives/limit values are exceeded, and no additional air quality mitigation will be required at the proposed development to protect residents.

6.2.2 Cycle parking provision and electric vehicle charging points are proposed at the scheme in line with design standards and the London Plan. The Residential Travel Plan for the proposed development also includes a range of measures aimed at promoting the most sustainable forms of travel, with an emphasis on reducing reliance on single occupancy car journeys (Mayer Brown Limited, 2024). The measures in the Residential Travel Plan are anticipated to reduce car driver trips due to the proposed development by 5%.

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

6.3. Air Quality Neutral

6.3.1 The calculation of the annual development trips with mitigation is shown in **Table 15**. The annual development trips of 24,820 remain higher than the TEB of 22,797 with excess trips of 2,023 per year.

Table 15: Development Trips with Mitigation

Land Use	Occupier Light Vehicle Trips ^a	Annual Development Trips
Residential	68	24,820

^a Total light vehicle trips of 84 minus 12 servicing trips minus 5% Travel Plan reduction.

6.3.2 If it is not possible to identify or agree appropriate and adequate on or off-site mitigation measures with the local planning authority, it may be possible, at the discretion of the local planning authority, to agree an offsetting payment instead.

6.3.3 An offsetting payment has been calculated by multiplying excess emissions above the benchmark by a damage cost over a 30-year period with a 2% annual uplift using the

method and data provided in the London Plan Guidance on Air Quality Neutral (GLA, 2023).

Table 16: Offsetting Payment Calculation

Emissions	Benchmark (tonnes/yr) ^a	Total Predicted Emissions (tonnes/yr) ^b	Excess Emissions (tonnes/yr)	Damage Cost (£/tonne) ^c	Annual Offsetting Amount (£)	Offsetting Amount (£) ^d
Transport NOx Emissions	0.09	0.10	0.008	33,064	267	10,827
Transport PM _{2.5} Emissions	0.01	0.01	0.001	246,942	159	6,469
Total						17,296

a TEB multiplied by the average km travelled by car per trip in Outer London (11.4km) and the emission factors per vehicle km in Outer London (0.35gNOx/veh-km and 0.028 gPM_{2.5}/veh-km).

b Annual development trips multiplied by the average km travelled by car per trip in Outer London (11.4km) and the emission factors per vehicle km in Outer London (0.35gNOx/veh-km and 0.028 gPM_{2.5}/veh-km).

c 2022 values for road transport in Outer London (Defra, 2024b).

d Annual amount multiplied over 30 years, with a 2 per cent annual uplift using a factor of 40.568079205.

7 Residual Impacts

7.1. Construction Phase

- 7.1.1 The London Plan SPG is clear that, with appropriate mitigation in place, the residual effect will normally be 'not significant'. With the implementation of the mitigation measures set out in **Appendix A4**, the residual effects are judged to be insignificant.
- 7.1.2 During adverse weather conditions, or where there is an interruption to the water supply, there may be occasional, short-term dust annoyance; however, the likely scale and duration of these effects would not change the conclusion that the residual effects are insignificant.

7.2. Operational Phase

- 7.2.1 The residual impacts will be the same as those identified in **Section 5.2**.

8 Conclusions

- 8.1.1 The construction phase will have the potential to create dust. It will therefore be necessary to implement mitigation measures to minimise dust emission. With these measures in place, it is expected that any residual effects will be insignificant.
- 8.1.2 The impacts on air quality at the proposed development due to emissions from the local road network have been shown to be acceptable, with predicted concentrations being below the air quality objectives.
- 8.1.3 The operational air quality impacts on the development are judged to be insignificant. This professional judgement takes account of the conclusion that no residents of the proposed development will be exposed to exceedances of the objectives.
- 8.1.4 The proposed development will be Air Quality Neutral with regard to buildings emissions. As the proposed development will not lead to an increase in motor vehicle movements, it is also Air Quality Neutral with regard to transport emissions; however, as the application site is within an Air Quality Focus Area, a full Air Quality Neutral Assessment has been completed based on the level of vehicle trips generated by the proposed development. The annual development trips are higher than the TEB; therefore, if further on or off-site mitigation measures cannot be agreed with the local planning authority, it may be necessary to agree an offsetting payment.
- 8.1.5 There should be no constraints to the development with regard to air quality, as the proposed development is consistent with the relevant parts of:
 - The NPPF and PPG;
 - The London Plan;
 - Policy EM8 of the Hillingdon Local Plan Part 1 Strategic Policies; and
 - Policy DMEI 14 of the Hillingdon Local Plan Part 2 Development Management Policies.

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10 Glossary

AQAL	Air quality assessment level
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
Defra	Department for Environment, Food and Rural Affairs
EPUK	Environmental Protection UK
Exceedance	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LEZ	Low Emission Zone
µg/m³	Microgrammes per cubic metre
MAQS	Mayor's Air Quality Strategy
NO	Nitric oxide
NO₂	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO ₂ + NO)
NPPF	National Planning Policy Framework
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
PM₁₀	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
PM_{2.5}	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal

11 Appendices

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A1 Dust Risk Assessment Methodology

A1.1. Introduction

A1.1.1 The London Plan SPG on the Control of Dust and Emissions During Construction and Demolition (GLA, 2014) divides activities on construction sites into four types to reflect their different potential impacts:

- demolition;
- earthworks;
- construction; and
- trackout.

A1.1.2 A series of steps then consider the potential impact due to:

- the risk of health effects from an increase in exposure to PM₁₀ and PM_{2.5};
- annoyance due to the deposition of dust;
- harm to the natural environment.

A1.2. Step 1: Screen the Need for a Detailed Assessment

A1.2.1 An assessment is required where there is a human receptor within 50 m of the site boundary, and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s), or where there is an ecological receptor within 50 m of the site boundary, and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

A1.2.2 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is negligible, and any effects will be not significant.

A1.3. Step 2: Assess the Risk of Dust Impacts

A1.3.1 A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emissions magnitude (Step 2A); and
- the sensitivity of the area to dust impacts (Step 2B).

A1.3.2 These two factors are combined at Step 2C to determine the risk of dust impacts from each type of construction activity, with no mitigation applied.

Step 2A: Potential Dust Emissions Magnitude

A1.3.3 The dust emission magnitude is classified as small, medium or large. Examples of how the potential dust emission magnitude for each activity can be defined are shown in **Table A1**.

Table A1: Examples of How the Dust Emission Magnitude can be Defined

Class	Example
Demolition	
Large	Total building volume >50,000 m ³ , potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >20 m above ground level.
Medium	Total building volume 20,000 m ³ – 50,000 m ³ , potentially dusty construction material, demolition activities 10-20 m above ground level.
Small	Total building volume <20,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Earthworks	
Large	Total site area >10,000 m ² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.
Medium	Total site area 2,500 m ² – 10,000 m ² , moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.
Small	Total site area <2,500 m ² , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	
Large	Total building volume >100,000 m ³ , piling, on site concrete batching; sandblasting.
Medium	Total building volume 25,000 m ³ – 100,000 m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.
Small	Total building volume <25,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout ^a	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
Medium	10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.

^a These numbers are for vehicles that leave the site after moving over unpaved ground.

Step 2B: Define the Sensitivity of the Area

A1.3.4 The sensitivity of the area takes account of:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM₁₀, the local background concentrations; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

A1.3.5 The specific sensitivities of different types of receptor to dust soiling and PM₁₀ are shown in **Table A2**, **Table A3** and **Table A4**. Professional judgement should be used to identify where on the spectrum of sensitivity a receptor lies, taking account of specific circumstances, i.e. the first occupants of residential units on a phased development may be expected to be less sensitive to dust soiling.

A1.3.6 The sensitivity of the area is then determined from the specific sensitivities of the receptors using the matrices set out in **Table A5**, **Table A6** and **Table A7**. Professional judgement should be used to determine the final sensitivity of the area, taking account of:

- any history of dust generating activities in the area;
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between source and receptors;
- any conclusions drawn from analysing local meteorological data which accurately represents the area; and if relevant, the season during which the works will take place;
- any conclusions drawn from local topography;
- duration of the potential impact, as a receptor may become more sensitive over time; and
- any other known specific receptor sensitivities.

Step 2C: Define the Risk of Impacts

A1.3.7 The dust emission magnitude determined at Step 2A is combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts with no mitigation applied. The level of risk for each activity is determined using the matrix in **Table A8**.

A1.4. Determine Site Specific Mitigation

A1.4.1 The dust risk category determined at Step 2C has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The highly recommended and desirable mitigation measures set out in the London Plan SPG will form the basis of the mitigation.

A1.4.2 The mitigation measures will inform an Air Quality and Dust Management Plan (AQDMP), which will be submitted to the local authority for approval prior to works commencing on-site.

A1.4.3 The London Plan SPG is clear that the primary aim of the risk assessment is to identify site specific mitigation that, once adopted, will ensure that there will be no significant effect.

Table A2: Sensitivities of People to Dust Soiling

Class	Principles	Examples
High	Users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.	Dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms.
Medium	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 the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	Parks and places of work.
Low	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; or there is transient exposure, where the 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.	Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Table A3: Sensitivities of People to PM₁₀

Class	Principles	Examples
High	Locations where members of the public may be exposed for eight hours or more in a day.	Residential properties, hospitals, schools and residential care homes.
Medium	Locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	Office and shop workers, but will generally not include workers occupationally exposed to PM ₁₀
Low	Locations where human exposure is transient.	Public footpaths, playing fields, parks and shopping streets.

Table A4: Sensitivities of Receptors to Ecological Effects

Class	Principles	Examples
High	Locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species.	Special Areas of Conservation (SAC) with dust sensitive features.
Medium	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition.	Sites of Special Scientific Interest (SSSI) with dust sensitive features.
Low	Locations with a local designation where the features may be affected by dust deposition.	Local Nature Reserves with dust sensitive features.

Table A5: Sensitivity of the Area to Dust Soiling Effects on People and Property ^a

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

a For demolition, earthworks and construction, the distances are measured from the dust source, or the application site boundary. For trackout, the distances are measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge or the road.

Table A6: Sensitivity of the Area to Human Health Effects ^a

Receptor Sensitivity	Annual Mean PM ₁₀	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

a For demolition, earthworks and construction, the distances are measured from the dust source, or the application site boundary. For trackout, the distances are measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large

sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge or the road.

Table A7: Sensitivity of the Area to Ecological Effects ^a

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

a For demolition, earthworks and construction, the distances are measured from the dust source, or the application site boundary. For trackout, the distances are measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge or the road.

Table A8: Defining the Risk of Dust Impacts

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

A2 Modelling Methodology

A2.1. Model Inputs

Traffic Data

A2.1.1 The AADT flows, vehicle fleet composition data and vehicle speeds have been derived from the London Atmospheric Emissions Inventory (LAEI) 2019 (GLA, 2021b). The traffic data have been factored forward to the verification and assessment years using the TEMPro System v8.1 (DfT, 2023a). The traffic data are shown in **Table A9** and the modelled road network is shown in **Figure 3**. Diurnal flow profiles for the traffic have been derived from the national diurnal profiles published by the DfT (DfT, 2023b).

Table A9: Summary of Traffic Data used in the Assessment

LAEI TOID	AADT		Fleet Composition (%)							Speed (km/h)
	2022	2026	Car	Taxi	LGV	Rigid HGV	Artic HGV	Bus and Coach	MCycle	
30201951	10,231	10,451	76.0	1.4	9.4	2.2	0.9	8.5	1.7	31.9
30201952	11,107	11,345	79.0	3.5	6.7	3.5	1.4	4.2	1.7	23.2
30127649	5,801	5,926	75.2	0.4	14.6	0.7	0.3	7.1	1.7	20.8
30449070	12,242	12,505	79.4	0.7	10.6	2.6	1.0	3.9	1.8	57.2
30095486	10,704	10,933	76.7	0.6	7.4	4.4	1.7	7.5	1.7	17.7
30095488	10,681	10,910	76.8	0.6	7.4	4.4	1.7	7.4	1.7	53.8
30398744	2,314	2,364	74.2	0.1	15.1	0.3	0.1	8.6	1.7	27.4
30201953	10,236	10,456	76.0	1.4	9.3	2.2	0.9	8.5	1.7	31.9
30201922	6,388	6,525	75.1	0.5	11.2	3.3	1.3	7.0	1.7	49.7
30201923	6,631	6,773	78.9	0.8	9.4	2.2	0.8	6.1	1.7	64.8
30127659	11,107	11,345	79.0	3.5	6.7	3.5	1.4	4.2	1.7	23.2
30201950	21,341	21,799	77.6	2.5	8.0	2.9	1.1	6.2	1.7	27.5
30309812	13,019	13,298	77.0	0.7	10.3	2.7	1.0	6.6	1.7	57.2
30127642	10,003	10,218	75.8	0.8	12.5	3.4	1.3	4.5	1.7	15.9
30398746	3,487	3,562	75.9	0.6	14.3	0.9	0.4	6.2	1.7	14.3
30602663	2,163	2,209	76.7	0.1	15.6	0.3	0.1	5.6	1.7	27.4
30317406	10,686	10,916	76.7	0.6	7.4	4.4	1.7	7.4	1.7	53.8
30127641	15,797	16,136	76.2	0.3	11.3	4.7	1.8	4.0	1.7	80.7
30095487	13,229	13,513	78.6	1.5	7.1	3.4	1.3	6.4	1.7	56.8
30398779	10,230	10,450	76.0	1.4	9.4	2.2	0.9	8.4	1.7	31.9
30403821	22,755	23,243	79.7	1.1	7.4	3.9	1.5	4.5	1.7	27.3
30803719	10,671	10,900	76.8	0.6	7.4	4.5	1.7	7.4	1.7	53.8
30398780	10,230	10,450	76.0	1.4	9.4	2.2	0.9	8.4	1.7	31.9
30131637	13,239	13,523	78.6	1.5	7.1	3.4	1.3	6.4	1.7	37
30602639	9,846	10,057	76.4	0.8	12.6	3.5	1.3	3.7	1.7	15.9
30131646	10,671	10,900	76.8	0.6	7.4	4.5	1.7	7.4	1.7	53.8

LAEI TOID	AADT		Fleet Composition (%)							Speed (km/h)
	2022	2026	Car	Taxi	LGV	Rigid HGV	Artic HGV	Bus and Coach	MCycle	
30094317	13,009	13,288	77.0	0.7	10.3	2.7	1.0	6.5	1.7	57.2
30317390	13,239	13,523	78.6	1.5	7.1	3.4	1.3	6.4	1.7	37
30131645	13,198	13,481	78.7	1.5	7.1	3.4	1.3	6.3	1.7	56.8
30127665	6,219	6,353	86.6	5.0	5.6	0.5	0.1	1.1	1.2	26.5
30309865	36,264	37,043	82.8	4.5	5.6	4.7	0.9	0.4	1.2	69.4
30094327	917	937	86.3	0.1	2.0	0.0	0.0	10.1	1.4	23.7
31191418	917	937	86.3	0.1	2.0	0.0	0.0	10.1	1.4	27.4
30201956	6,219	6,353	86.6	5.0	5.6	0.5	0.1	1.1	1.2	26.5
30472317	36,264	37,043	82.8	4.5	5.6	4.7	0.9	0.4	1.2	69.4
30309852	827	845	91.1	0.1	2.2	0.0	0.0	4.9	1.6	27.4
30209611	14,960	15,281	86.6	0.8	7.7	0.2	0.0	3.6	1.2	67.2
30209612	11,684	11,934	84.5	2.4	7.8	0.1	0.0	3.9	1.2	67.5
30131639	14,957	15,278	86.6	0.8	7.7	0.2	0.0	3.6	1.2	67.2
30209613	26,642	27,214	85.7	1.5	7.7	0.2	0.0	3.7	1.2	32.3
30309846	6,219	6,353	86.6	5.0	5.6	0.5	0.1	1.1	1.2	20.6
30309871	36,264	37,043	82.8	4.5	5.6	4.7	0.9	0.4	1.2	69.4
30131640	11,685	11,935	84.5	2.4	7.8	0.1	0.0	3.9	1.2	67.5
30309877	5,398	5,514	85.6	1.3	5.2	4.1	0.8	1.9	1.2	5
31211006	917	937	86.3	0.1	2.0	0.0	0.0	10.1	1.4	27.4
30398784	68	70	0.0	0.0	0.0	0.0	0.0	98.5	1.5	25.4
30451705	25,953	26,510	86.8	1.5	7.8	0.2	0.0	2.5	1.2	67.3
30201974	31,594	32,272	82.6	4.8	5.7	1.4	0.7	4.1	0.8	82.8
30201975	32,952	33,660	82.8	5.7	3.1	1.7	0.8	5.0	0.8	76
30081671	12,724	12,997	77.5	0.8	6.7	4.0	1.6	7.7	1.7	41.5
30602636	11,872	12,127	76.4	2.3	5.9	3.8	1.5	8.5	1.7	13.5
30209553	12,872	13,149	77.0	0.8	6.7	4.0	1.6	8.2	1.7	41.5
30131620	12,872	13,149	77.0	0.8	6.7	4.0	1.6	8.2	1.7	41.5
30131619	12,887	13,163	77.0	0.8	6.7	4.0	1.6	8.3	1.7	41.5

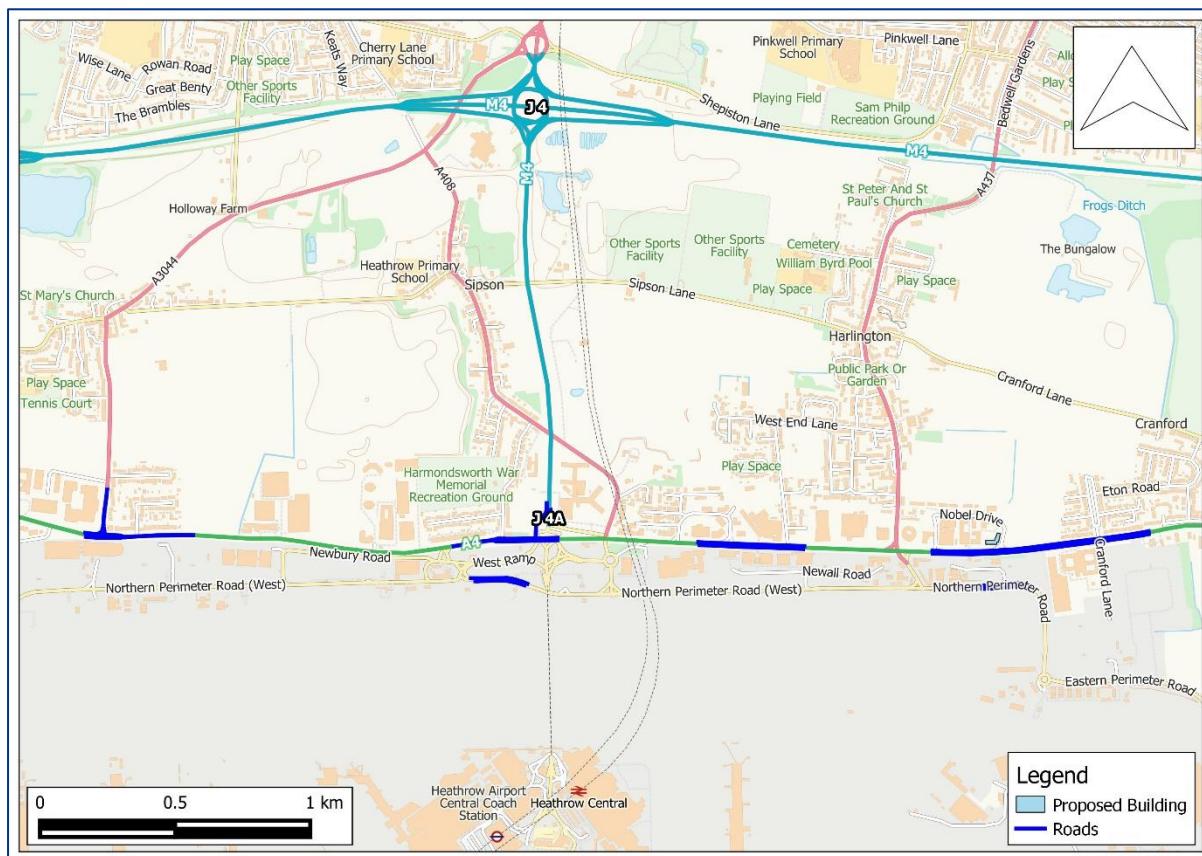


Figure 3: Modelled Roads

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Emissions

A2.1.2 Emissions have been calculated using the most recent version of the Emissions Factor Toolkit (EFT) v12.0.1 (Defra, 2024a). The traffic data have been entered into the EFT in order to calculate a combined emission rate for each of the road links in the modelled network.

Meteorological Data

A2.1.3 The model has been run using the full year of 2022 meteorological data taken from the monitoring station located at Heathrow Airport, which is considered suitable for the area.

A2.2. Background Concentrations

A2.2.1 Background concentrations have been assumed to be the same as those published by Defra (Defra, 2024a). These cover the whole country on a 1 km by 1 km grid and are published for each year from 2018 to 2030. The current maps have been verified against measurements undertaken during 2018.

A2.3. Verification

A2.3.1 The verification process seeks to minimise uncertainties associated with the air quality model by comparing the model output with locally measured concentrations.

A2.3.2 The model has been verified against 2022 data from the HI3 and LHRBR automatic monitoring sites and the HILL38, HILL39 and HILL41 diffusion tube monitoring sites, as shown in **Table 4** and **Figure 2**. Following an initial review, the automatic monitoring sites were excluded from the NO₂ verification calculation as the Defra predicted background annual mean NO₂ concentrations were higher than the measured concentrations. The verification methodology is described below.

NO₂

A2.3.3 The model output of road-NOx has been compared with the 'measured' road-NOx, calculated from the measured annual mean NO₂ concentrations and the background concentrations using the NOx from NO₂ calculator v8.1 published by Defra (Defra, 2024a).

A2.3.4 The slope of the best-fit line between the 'measured' road-NOx contribution and the model derived road-NOx contribution, forced through zero, has been used to determine the adjustment factor (**Figure 4**). The results imply that the model has over-predicted the road-NOx contribution, with an adjustment factor of 0.2 determined; therefore, in order to provide a conservative assessment, the modelled road-NOx outputs have not been adjusted.

PM₁₀ and PM_{2.5}

A2.3.5 The measured road-PM₁₀ and modelled road-PM₁₀ concentrations at the HI3 automatic monitoring site have been compared to provide a factor for PM. The data used to calculate the adjustment factor are provided below:

- Measured PM₁₀: 22 µg/m³
- 'Measured' road-PM₁₀ (measured – background at monitor): 22 – 15.3 = 6.7 µg/m³
- Modelled road-PM₁₀ = 0.8 µg/m³
- Road-PM adjustment factor: 6.7/0.8 = **8.5**

A2.3.6 The PM₁₀ factor derived from data from the LHRBR automatic monitoring was less than one and was not included in the calculation.

A2.3.7 The Defra predicted background PM_{2.5} concentration at the LHRBR automatic monitoring site was higher than the measured concentration; therefore, the factor for PM₁₀ derived using the HI3 data was also used to adjust the modelled road-PM_{2.5} outputs.

A2.4. Model Post-processing

NO₂

A2.4.1 The NOx to NO₂ calculator v8.1 published by Defra has been used to convert the modelled, verified road-NOx output for each receptor to road-NO₂. The background

NO₂ concentrations have then been added to the predicted road-NO₂ concentrations to give the final predicted concentrations.

PM₁₀ and PM_{2.5}

A2.4.2 The verified road-PM outputs need no further processing and have been added to the background concentrations to give the final predicted concentrations.

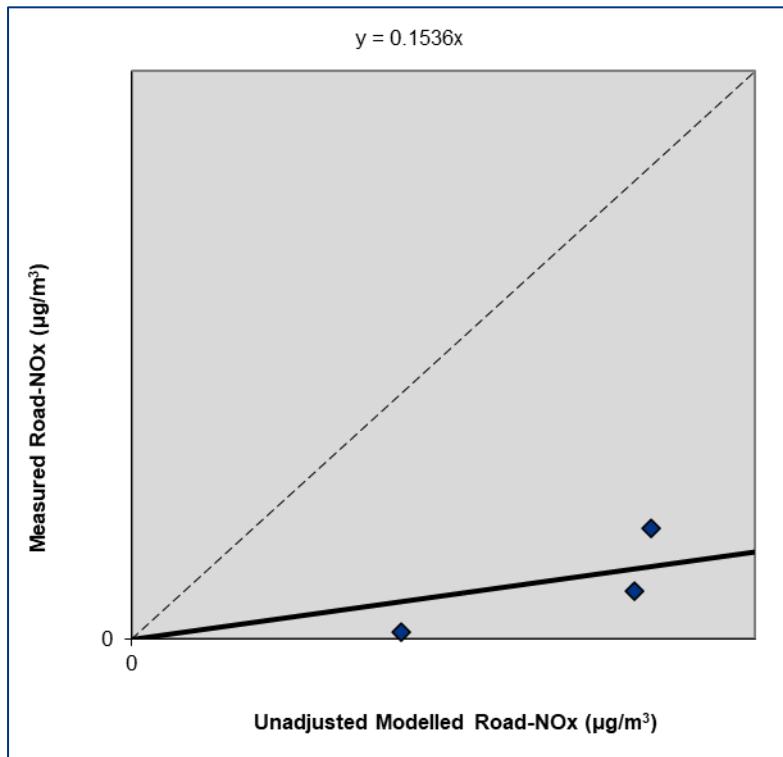


Figure 4: Comparison of Measured Road NOx to Unadjusted Modelled Road NOx Concentrations.

A3 Professional Experience

Bob Thomas, BSc (Hons) PgDip MSc MIEvSc MIAQM CSci

Bob Thomas is a Director at AQA, with over twenty years working in the sciences and sixteen years' experience in the field of air quality management and assessment. He has carried out air quality assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and PM₁₀, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. Bob has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers, architects and process operators, and has provided expert witness services at public inquiry. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

A full CV for Bob Thomas is available at <http://aqassessments.co.uk/about>

A4 Construction Mitigation

A4.1.1 The following is a set of measures that should be incorporated into the Air Quality and Dust Management Plan for the works:

A4.2. Site Management

- Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary;
- display the head or regional office contact information;
- record and respond to all dust and air quality pollutant emissions complaints;
- make a complaints log available to the local authority when asked;
- carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked;
- increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions; and
- record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation in the log book.

A4.3. Preparing and Maintaining the Site

- Plan the site layout: machinery and dust-causing activities should be located away from receptors;
- erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site;
- fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- avoid site runoff of water or mud;
- keep site fencing, barriers and scaffolding clean using wet methods;
- remove materials from site as soon as possible; and
- cover, seed or fence stockpiles to prevent wind whipping.

A4.4. Operating Vehicle/Machinery and Sustainable Travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone;
- ensure all non-road mobile machinery (NRMM) comply with the standards set within the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition;
- ensure all vehicles switch off their engines when stationary – no idling vehicles;
- avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where possible;
- impose and signpost a maximum-speed-limit of 10 mph on surfaced 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); and

- implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

A4.5. Operations

- 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;
- ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible);
- use enclosed chutes, conveyors and covered skips; and
- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

A4.6. Waste Management

- Reuse and recycle waste to reduce dust from waste materials; and
- No bonfires and burning of waste materials.

A4.7. Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible; and
- 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.

A4.8. Measures Specific to Trackout

- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site;
- avoid dry sweeping of large areas;
- ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; and
- implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).