Report

Hyde Park, Hayes

Air Quality Assessment

For Columbia Threadneedle Investments

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Executive Summary

The air quality impacts associated with the proposed residential-led development at Hyde Park, Hayes, in the London Borough of Hillingdon have been assessed.

During the construction works, a range of best practice mitigation measures will be implemented to reduce dust emissions, and the overall effect will be 'not significant'; appropriate measures have been set out in this report, to be included in the Dust Management Plan for the works.

The assessment has demonstrated that future residents of the proposed development will experience acceptable air quality, with pollutant concentrations well below the air quality objectives, and below the Greater London Authority (GLA) target for $PM_{2.5}$.

The proposed development will lead to changes in traffic flows on the local road network during construction and operation, but the assessment has shown that there will be no significant effects at any existing, sensitive receptor. A number of design measures have been incorporated within the proposed scheme to improve air quality in the vicinity of the proposed development; this includes reducing the current car parking provision from 912 spaces to 384. A Travel Plan has also been prepared to encourage the use of sustainable transport.

Overall, the construction and operational air quality effects of the proposed development are judged to be 'not significant'.

The proposed development has also been shown to meet the London Plan's requirement that new developments are at least 'air quality neutral'.

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1 Introduction

1.1 This report has been prepared by Air Quality Consultants Ltd | Part of Logika Group (AQC). It describes the potential air quality impacts associated with the proposed residential-led development at Hyde Park, Hayes in the London Borough of Hillingdon (LBH). The proposed development is described as:

"Outline planning permission (with all matters reserved excluding access) for demolition of existing buildings (above basement level) and delivery of residential development (Class C3), flexible residential / commercial floorspace, new public realm, landscaping, play space, car parking, cycle parking and associated works."

1.2 The proposed development will provide 10 or more dwellings and is therefore classified as a major development (The Town and Country Planning, 2015).

1.3 The proposed development lies within an Air Quality Management Area (AQMA) declared by LBH for exceedances of the annual mean nitrogen dioxide (NO_2) objective. It is also within one of the GLA's air quality Focus Areas; these are locations with high levels of human exposure where the annual mean limit value for NO_2 is exceeded. The proposed development will introduce new residential exposure into this area of potentially poor air quality; thus, an assessment is required to determine the air quality conditions that future residents will experience. It will also result in a change in traffic flows on local roads, which may impact on air quality at existing residential properties along the affected road network. The main air pollutants of concern related to road traffic emissions are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$).

1.4 The location of the proposed development is shown in Figure 1-1, along with the GLA Focus Area boundary.

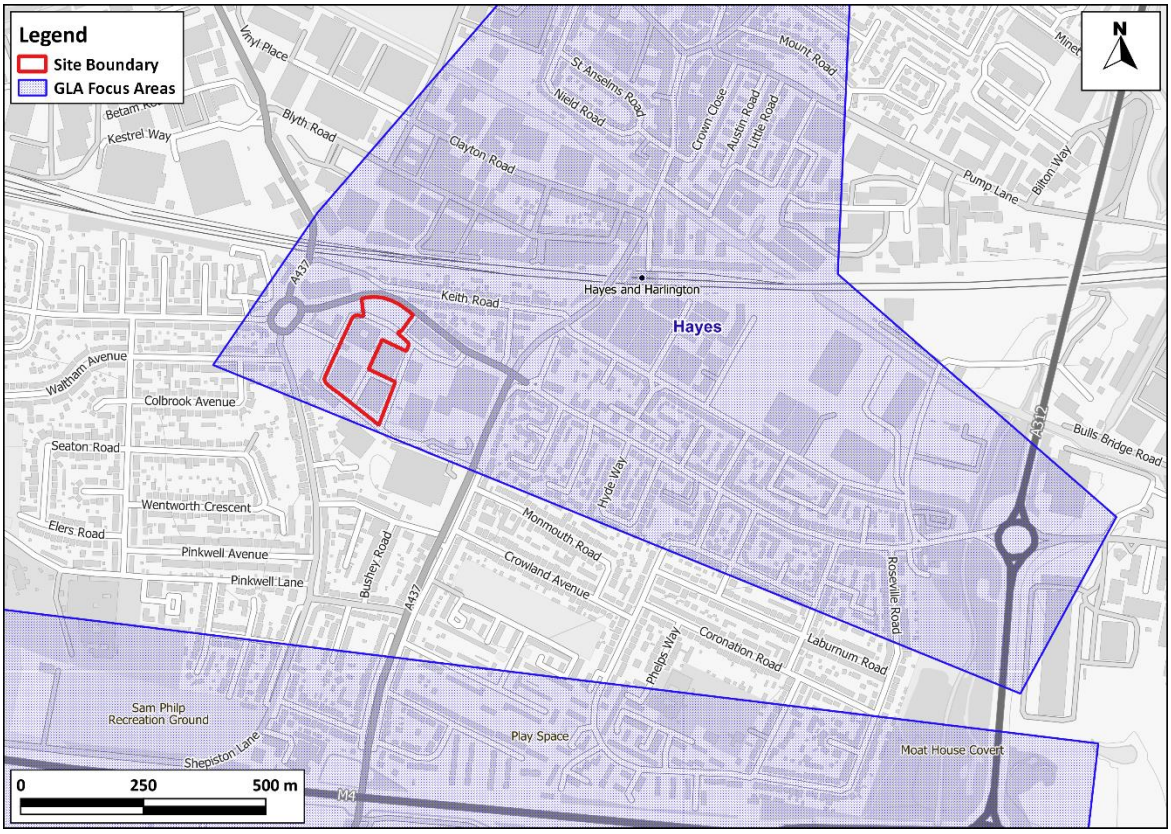

Figure 1-1: Proposed Development Setting in the Context of Air Quality

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

1.5 The proposed development will employ an all-electric energy strategy, including air source heat pumps and solar photovoltaics (PV); there will be no centralised combustion plant or backup diesel generators and thus no significant point sources of emissions within the proposed development.

1.6 The GLA's London Plan (GLA, 2021) requires new developments to be air quality neutral. The air quality neutrality of the proposed development has been assessed following the methodology provided in the latest GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023a).

1.7 The GLA has also released Supplementary Planning Guidance (SPG) on the Control of Dust and Emissions from Construction and Demolition (GLA, 2014). The SPG outlines a risk assessment approach for construction dust assessment and helps determine the mitigation measures that will need to be applied. A construction dust assessment has been undertaken and the appropriate mitigation has been set out.

1.8 This report describes existing local air quality conditions (base year 2023), and the predicted air quality in the future assuming that the proposed development does, or does not proceed. The assessment of traffic-related impacts focuses on 2028, which is the first year of occupation of the proposed development. The assessment of construction dust impacts focuses on the anticipated duration of the works.

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

2 Policy Context

2.1 All European legislation referred to in this report is written into UK law and remains in place.

Air Quality Strategy 2007

2.2 The Air Quality Strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an AQMA, and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Air Quality Strategy 2023

2.3 The Air Quality Strategy: Framework for Local Authority Delivery 2023 (Defra, 2023a) sets out the strategic air quality framework for local authorities and other Air Quality Partners in England. It sets out their powers and responsibilities, and actions the government expects them to take. It does not replace other air quality guidance documents relevant to local authorities.

Clean Air Strategy 2019

2.4 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

Reducing Emissions from Road Transport: Road to Zero Strategy

2.5 The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper (DfT, 2018) in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.

2.6 The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government's 'Zero Emission Vehicle' (ZEV) mandate requires that 80% of new cars and 70% of new vans sold in Great Britain must be zero exhaust emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the

coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

Environment Act 2021

2.7 The UK's new legal framework for protection of the natural environment, the Environment Act (2021) passed into UK law in November 2021. The Act gives the Government the power to set long-term, legally binding environmental targets. It also establishes an Office for Environmental Protection (OEP), responsible for holding the Government to account and ensuring compliance with these targets.

2.8 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96) sets two new targets for future concentrations of $PM_{2.5}$. These targets are described in Paragraph 3.4.

Environmental Improvement Plan 2023

2.9 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018a). The Environment Act (2021) requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2023 (Defra, 2023b) is the first revision. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, including that of achieving clean air.

2.10 The Environmental Improvement Plan 2023 sets out the new air quality targets which have been set for concentrations of $PM_{2.5}$. These targets, which are described in more detail in Paragraph 3.4, include the long-term targets in the Statutory Instrument described in Paragraph 2.8, and interim targets to be achieved by 2028.

2.11 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also outlines the respective roles of industry, agricultural sectors, and the DfT in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

Planning Policy

National Policies

2.12 The National Planning Policy Framework (NPPF) (2024) sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development, and that the planning system has three overarching objectives, one of which (Paragraph 8c) is an 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".

2.13 To prevent unacceptable risks from air pollution, Paragraph 187 of the NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by…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".

2.14 Paragraph 198 states:

"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".

2.15 More specifically on air quality, Paragraph 199 makes clear 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".

2.16 The NPPF is supported by Planning Practice Guidance (PPG) (Ministry of Housing, Communities & Local Government, 2019), which includes guiding principles on how planning can take account of the impacts of new development on air quality. The PPG states that:

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with 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".

2.17 Regarding plan-making, the PPG states:

"It is important to take into account air quality management areas, Clean Air Zones and other areas including sensitive habitats or designated sites of importance for biodiversity where there could be specific requirements or limitations on new development because of air quality".

2.18 The role of the local authorities through the LAQM regime is covered, with the PPG stating that a local authority Air Quality Action Plan "*identifies measures that will be introduced in pursuit of the objectives and can have implications for planning*". In addition, the PPG makes clear that "*Odour and dust can also be a planning concern, for example, because of the effect on local amenity*".

2.19 Regarding the need for an air quality assessment, the PPG states 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".

2.20 The PPG sets out the information that may be required in an air quality assessment, making clear 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".

2.21 The PPG also provides guidance on options for mitigating air quality impacts, as well as examples of the types of measures to be considered. It 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. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented".

London-Specific Policies

2.22 The key London-specific policies are summarised below, with more detail provided, where required, in Appendix A1.

The London Plan

2.23 The London Plan (GLA, 2021) sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The key policy relating to air quality is Policy SI 1 on Improving air quality, Part B1 of which sets out three key requirements for developments:

"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*".

2.24 The Policy then details how developments should meet these requirements, stating:

"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*".

2.25 Part C of the Policy introduces the concept of Air Quality Positive for large-scale development, stating:

"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."

2.26 In consultation with the London Borough of Hillingdon (LBH), it was agreed that an Environmental Impact Assessment (EIA) is not required for the site. As the proposed development is not subject to an EIA, an Air Quality Positive statement is therefore not required.

2.27 Regarding construction and demolition impacts, Part D of Policy SI 1 of the London Plan states:

"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".

2.28 Part E of Policy SI 1 states the following regarding mitigation and offsetting of emissions:

"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".

2.29 The explanatory text around Policy SI 1 of the London Plan states the following with regard to assessment criteria:

"The Mayor is committed to making air quality in London the best of any major world city, which means not only achieving compliance with legal limits for NO_2 as soon as possible and maintaining compliance where it is already achieved, but also achieving World Health Organisation targets for other pollutants such as Particulate Matter.

The aim of this policy is to ensure that new developments are designed and built, as far as is possible, to improve local air quality and reduce the extent to which the public are exposed to poor air quality. This means that new developments, as a minimum, must not cause new exceedances of legal air quality standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits. Where limit values are already met, or are predicted to be met at the time of completion, new developments must endeavour to maintain the best ambient air quality compatible with sustainable development principles.

Where this policy refers to 'existing poor air quality' this should be taken to include areas where legal limits for any pollutant, or World Health Organisation targets for Particulate Matter, are already exceeded and areas where current pollution levels are within 5 per cent of these limits"[1].

2.30 The London Plan includes a number of other relevant policies, which are detailed in Appendix A1.

London Environment Strategy

2.31 The London Environment Strategy was published in May 2018 (GLA, 2018a). The strategy considers air quality in Chapter 4; the Mayor's main objective is to create a "*zero emission London by 2050*". Policy 4.2.1 aims to "*reduce emissions from London's road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport*". The strategy sets a target to achieve, by 2030, the guideline value for $PM_{2.5}$ which was set by the World Health Organisation (WHO) in 2005. An implementation plan for the strategy has also

[1] The London Plan was developed based on a World Health Organisation guideline for $PM_{2.5}$ of 10 $\mu g/m^3$ (see Paragraph 2.31).

been published which set out what the Mayor would do between 2018 and 2023 to help achieve the ambitions in the strategy.

Mayor's Transport Strategy

2.32 The Mayor's Transport Strategy (GLA, 2018b) sets out the Mayor's policies and proposals to reshape transport in London over the next two decades. The Strategy focuses on reducing car dependency and increasing active sustainable travel, with the aim of improving air quality and creating healthier streets. It notes that development proposals should "*be designed so that walking and cycling are the most appealing choices for getting around locally*".

GLA SPG: The Control of Dust and Emissions During Construction and Demolition

2.33 The GLA's SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014) outlines a risk assessment based approach to considering the potential for dust generation from a construction site, and sets out what mitigation measures should be implemented to minimise the risk of construction dust impacts, dependent on the outcomes of the risk assessment. This guidance is largely based on the Institute of Air Quality Management[2] (IAQM's) guidance (IAQM, 2024), and it states that "*the latest version of the IAQM Guidance should be used*".

GLA LPG: Air Quality Neutral

2.34 The GLA's Air Quality Neutral LPG outlines the assessment approach for determining whether a development is Air Quality Neutral (GLA, 2023a). The guidance sets out benchmarks for the maximum allowable emissions of NOx and particulate matter based on the size and use class of the proposed development. To determine whether the development is Air Quality Neutral, the building and transport emissions from the proposed development are compared to these benchmarks.

Air Quality Focus Areas

2.35 The GLA has identified 160 air quality Focus Areas in London. These are locations that not only exceed the annual mean limit value for NO_2, but also have high levels of human exposure. They do not represent an exhaustive list of London's air quality hotspot locations, but locations where the GLA believes the problem to be most acute. They are also areas where the GLA considers there to be the most potential for air quality improvements and are, therefore, where the GLA and Transport for London (TfL) will focus actions to improve air quality. The proposed development is located within the Hayes air quality Focus Area, as presented in Figure 1-1.

Local Policies

2.36 The Local Plan Part 1: Strategic Policies (LBH, 2012) was adopted by LBH in November 2012 and provides a framework for development in the Borough up to 2026. The Plan includes the two Strategic Objectives (SOs) related to air quality, including:

- SO10: "*Improve and protect air… quality…*"; and
- SO11: "*…minimise emissions of… local air quality pollutants from new development and transport*".

2.37 The main policy within the Local Plan Part 1 of relevance to air quality is Policy EM8 'Land, Water, Air and Noise', which states that:

[2] The IAQM is the professional body for air quality practitioners in the UK.

"…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 Action plans, in particular where Air Quality Management Areas have been designated…".

2.38 LBH adopted the Local Plan Part 2: Development Management Policies (LBH, 2020) in January 2020, which delivers the detail of the strategic policies set out in the Local Plan Part 1: Strategic Policies. Together the documents form a comprehensive development strategy for the Borough up to 2026. The Local Plan Part 2 includes the following policies that relate to air quality and the proposed development:

2.39 Policy DMEI 14 'Air Quality' states that:

"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".

2.40 Policy DMT 1 'Managing Transport Impacts' states that:

"[…]

In order for developments to be acceptable they are required to… have no significant adverse transport or associated air quality… impacts on the local and wider environment, particularly on the strategic road network…"

2.41 Policy DMT 2 'Highways Impacts' states that:

"Development proposals must ensure that… they do not contribute to the deterioration of air quality…".

2.42 The LBH has also adopted a Supplementary Planning Document (SPD) on Planning Obligations (LBH, 2014), which states that:

"Obligations may be sought to ensure no detrimental impacts on air quality and/or to ensure compliance with the objective of the AQMA. The following circumstances may establish a requirement for planning obligations:

- *As a recommendation of an air quality assessment;*
- *To mitigate the impacts from emissions from new development where these cannot be resolved through other means such as planning conditions, travel plans or statutory licenses;*
- *To mitigate impacts on new development where floor space is to be occupied for significant parts of the day, such as residential, where located in an area of poor air quality; and*
- *To mitigate air quality impacts during the construction phase where these cannot be controlled through conditions or other statutory licenses."*

Building Standards

2.43 Part F(1) of Schedule 1 of the Building Regulations 2010 as amended June 2022 (Ministry of Housing, Communities & Local Government, 2022) places a duty on building owners, or those responsible for relevant building work[3], to ensure adequate ventilation is provided to building occupants.

2.44 Approved Document F (HM Government, 2021a), which accompanies the Building Regulations, explains that care should be taken to minimise entry of external air pollutants. Specific steps should be taken to manage ventilation intakes where the building is near to a significant source of emissions, or if local ambient concentrations exceed values set in the Air Quality Standards Regulations 2010 (see Paragraph 3.10, later). These steps include maximising the distance between emission source and air intake, considering likely dispersion patterns, and considering the timing of pollution releases when designing the ventilation system.

2.45 Part S(1) of Schedule 1, and Regulation 44D, of the Building Regulations 2010 (Ministry of Housing, Communities & Local Government, 2022) define a requirement for the provision of infrastructure for charging electric vehicles. Precise requirements are explained further within Approved Document S (HM Government, 2021b) and depend on the overall number of parking spaces provided and the average financial cost of installation.

2.46 Compliance with the Building Regulations is not required for planning approval, but it is assumed that the Regulations will be complied with in the completed development.

Air Quality Action Plans

National Air Quality Plan

2.47 Defra has produced an Air Quality Plan to tackle roadside NO_2 concentrations in the UK (Defra, 2017); a supplement to the 2017 Plan (Defra, 2018b) was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ). There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in the modelling undertaken for this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the proposed

[3] Building work is a legal term for work covered by the Building Regulations. With limited exemptions, the Regulations apply to all significant building work, including erecting or extending a building.

development. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

Local Air Quality Action Plan

2.48 The LBH has declared an AQMA for nitrogen dioxide covering the south of the borough, defined by the A40 corridor from the western borough boundary, east to the intersection with the Yeading Brook and north until its intersection with the Chiltern-Marylebone railway line. LBH's Air Quality Action Plan (AQAP) (LBH, 2019) and latest annual progress report (LBH, 2024) detail a series of measures by which they will seek to achieve the air quality objectives in their AQMA. The following actions are of relevance to this assessment:

- action 2 'Ensuring emissions from construction are minimised';
- action 3 'Ensuring enforcement of Non-Road Mobile Machinery (NRMM) air quality policies (addresses emissions from e.g. building sites regarding cranes, generators, etc.)'; and
- action 5 'Enforce Air Quality Neutral (AQN) policy with more stringent application of mitigation required in the Hillingdon Focus Areas'.

2.49 Action 5 also states that "*In AQ focus areas NOx damage calculation costs are requested to form the basis of planning obligation for costs where the developer mitigation is insufficient*". LBH's most recent air quality annual status report (LBH, 2024) also highlights the importance that the Council places on Air Quality Neutral and damage cost calculations, particularly in focus areas.

"The Council applies a pollution damage cost to emissions arising from the potential development and seeks sufficient mitigation from the developer to reduce such emissions being brought into the Focus Area. Where the mitigation measures offered are not sufficient the remaining pollution damage costs form the basis of an s106 negotiation to improve air quality in line with the Council's AQAP Action Plan measures 5."

3 Assessment Criteria

3.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups. The 'objectives' set out the extent to which the Government expects the standards to be achieved *taking account of practical considerations.* The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002).

3.2 The UK-wide objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour mean nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3 (Defra, 2022). Therefore, 1-hour nitrogen dioxide concentrations will only be considered if the annual mean concentration is above this level. Measurements have also shown that the 24-hour mean PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3 (Defra, 2022). The predicted annual mean PM_{10} concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM_{10} objective. Where predicted annual mean concentrations are below 32 µg/m^3 it is unlikely that the 24-hour mean objective will be exceeded.

3.3 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The GLA explains where these objectives will apply in London (GLA, 2019). The annual mean objectives for NO_2 and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals and care homes etc., the gardens of residential properties, school playgrounds and the grounds of hospitals and care homes. The 24-hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as at hotels. The 1-hour mean objective for NO_2 applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.

3.4 For $PM_{2.5}$, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value (see Paragraph 3.10), originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

3.5 Defra has also set two new targets, and two new interim targets, for $PM_{2.5}$ concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by the end of 2040 (referred to as the annual mean concentration target or AMCT), with the interim target being a value of 12 µg/m^3 by the start of 2028[4]. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. By the end of 2040, overall population exposure to $PM_{2.5}$ should be reduced by 35% compared with 2018 levels (referred to as the population exposure reduction target or PERT), with the interim target being a reduction of 22% by the start of 2028 (Table 3-1).

[4] Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m^3 would not exceed the 10 µg/m^3 target.

Table 3-1: Environment Act $PM_{2.5}$ Targets

Metric	Target	Target year
AMCT	Interim target: 12 µg/m^3	2028
	Legally binding target: 10 µg/m^3	2040
PERT	Interim target: 22% reduction in exposure compared to 2018	2028
	Legally binding target: 35% reduction in exposure compared to 2018	2040

3.6 In 2024 Defra published Interim Planning Guidance on the $PM_{2.5}$ targets (Defra, 2024). This states that:

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

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

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

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

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

3.9 As explained in Paragraph 2.31, the GLA has set a target to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by 2030. This target was derived from an air quality guideline set by WHO in 2005. In 2021, WHO updated its guidelines, but the London Environment Strategy (GLA, 2018a) considers the 2005 guideline of 10 µg/m^3. While there is no explicit requirement to assess against the GLA target of 10 µg/m^3, it has nevertheless been included within this assessment.

3.10 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets limit values for NO_2, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010)[5]. The limit values for NO_2 and PM_{10} are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local

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

modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

3.11 The relevant air quality criteria for this assessment are provided in Table 3-2.

Table 3-2: Air Quality Criteria for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Value
NO_2	1-hour Mean	200 µg/m³ not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m³
PM_{10}	24-hour Mean	50 µg/m³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m³ [a]
$PM_{2.5}$	Annual Mean	20 µg/m³ [b]
	Annual Mean	10 µg/m³ by 2030

[a] A proxy value of 32 µg/m³ as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM_{10} objective are possible (Defra, 2022).

[b] There is no numerical $PM_{2.5}$ objective for local authorities (see Paragraph 3.4). Convention is to assess against the UK limit value which is currently 20 µg/m³.

Construction Dust Criteria

3.12 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM (2024) has been used (the GLA's SPG (GLA, 2014) recommends that the assessment be based on the latest version of the IAQM guidance). Full details of this approach are provided in Appendix A2.

Road Traffic Screening Criteria

3.13 Environmental Protection UK (EPUK) and the IAQM recommend a two-stage screening approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in Appendix A3, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m² of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

3.14 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in Appendix A3) inside an AQMA are a change in flows of more than 25 Heavy Duty Vehicles (HDVs) or 100 Light Duty Vehicles (LDVs) per day. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that "*the criteria provided are precautionary and should be treated as indicative*", and "*it may be appropriate to amend them on the basis of professional judgement*".

3.15 While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also sometimes be used to identify the extent of the road network that requires assessment. Where the change in traffic on a given road link is less than the relevant screening threshold, it is

unlikely that a significant impact would occur, and these links can be disregarded unless there are additional development-related emissions affecting receptors along the link.

4 Assessment Approach

Study Area

4.1 The study area for the assessment has been identified using professional judgement, focussing on the areas where impacts are anticipated to be greatest. It includes the application site itself and all of the roads along which the development will lead to a potentially significant change in traffic flows. Specifically, the assessment has focussed on Dawley Road, Bourne Avenue, North Hyde Road, Station Road, Millington Road, Bedwell Gardens, and the A312. The study area is shown in Figure 4-1.

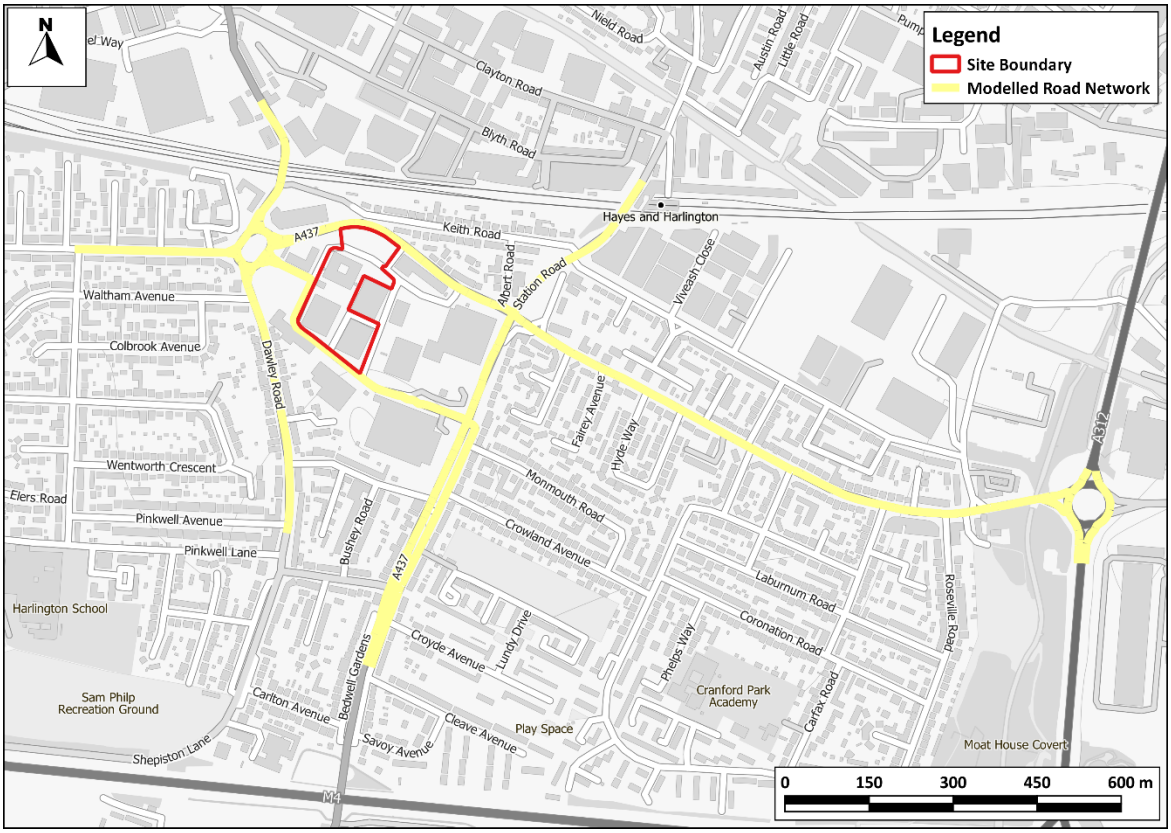

Figure 4-1: Study Area

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

4.2 The construction dust assessment considers the potential for impacts within 250 m of the site boundary, or within 50 m of roads used by construction vehicles within 250 m of the site. The specific areas considered are detailed in Section 6.

Receptors

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

effect of several road links, and close to those roads where the traffic increases as a result of the proposed development will be greatest.

4.4 Fourteen existing residential properties have been identified as receptors for the assessment. Six additional receptor locations have been identified within the new development, which represent exposure to existing sources. These locations are described in Table 4-1 and shown in Figure 4-2. In addition, concentrations have been modelled at the diffusion tube monitoring sites HILL16, HILL39, and HILL40 located in Sipson and Harmondsworth, in order to verify the model outputs (see Appendix A5 for verification method and study area).

Table 4-1: Description of Receptor Locations

Receptor	Type	X coordinate	Y coordinate	Heights Modelled (m) [a]
Existing properties				
E1	Residential	508969	179318	1.5
E2	Residential	509008	179263	1.5
E3	Residential	509026	179403	1.5
E4	Residential	509066	179147	1.5
E5	Residential	509289	178799	1.5
E6	Residential	509398	179279	1.5
E7	Residential	509433	179013	1.5
E8	Residential	509440	179048	1.5
E9	Residential	509488	179176	4.5
E10	Residential	509570	179155	1.5
E11	Residential	510083	178883	1.5
E12	Residential	509595	179301	1.5
E13	Residential	510290	178880	1.5
E14	Residential	510314	178856	1.5
New properties				
P1	Residential	509146	179282	1.5
P2	Residential	509136	179260	1.5
P3	Residential	509171	179334	1.5
P4	Residential	509200	179369	1.5
P5	Residential	509277	179339	1.5
P6	Residential	509113	179211	1.5

[a] Heights of 1.5 m and 4.5 m are used to represent ground- and first-floor level exposure, respectively, where appropriate.

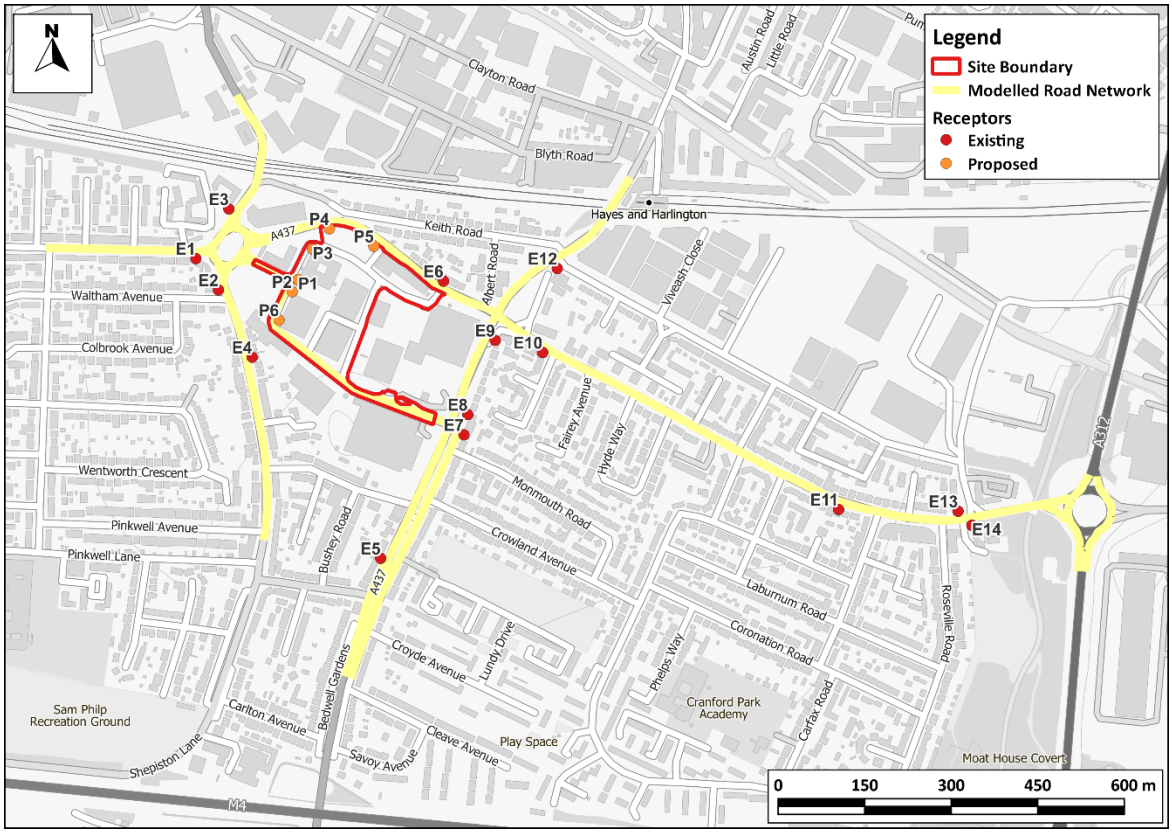

Figure 4-2: Receptor Locations

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

4.5 Selected receptors may be representative of air quality conditions at a number of properties; consideration has been given to how many sensitive locations each modelled receptor represents when considering the impacts of the proposed development and the overall significance of effects.

4.6 The construction dust risk assessment approach does not require specific receptors to be identified; instead, the numbers of different types of receptors within given distance bands are counted. These receptor counts are provided in Section 6.

Existing Conditions

4.7 Existing sources of emissions and baseline air quality conditions within the study area have been defined using a number of approaches:

- industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2025a);
- local sources have been identified through examination of the LBH's Air Quality Review and Assessment reports;
- information on existing air quality has been obtained by collating the results of monitoring carried out by the local authority. This covers both the study area and nearby sites, the latter being used to provide context for the assessment;

- background concentrations have been defined using Defra's 2021-based background maps (Defra, 2025b). These cover the whole of the UK on a 1x1 km grid. NO_2 background maps for 2023 have been calibrated against local measurements made at LBH background monitoring sites within or near to the study area. Specifically, background diffusion tube monitoring sites HILL17, HILL19-HILL21, HILL25, HILL29 and HILL31 and automatic background sites HIL, SIPS and T55 have been used. All mapped background NO_2 concentrations have therefore been calibrated by applying an average factor of 1.33. Mapped background concentrations of PM_{10} and $PM_{2.5}$ have not been adjusted; and
- whether or not there are any exceedances of the annual mean limit value for NO_2, PM_{10} and $PM_{2.5}$ in the study area has been identified using Defra's Compliance data (2025c).

Construction Impacts

4.8 The construction dust assessment considers the potential for impacts within 250 m of the site boundary, or within 50 m of roads used by construction vehicles. The assessment methodology follows the GLA's SPG on the Control of Dust and Emissions During Construction and Demolition (GLA, 2014), which is based on that provided by IAQM (2024). This follows a sequence of steps. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts. Appendix A2 explains the approach in more detail.

Road Traffic Impacts

Screening

4.9 The first step in considering the road traffic impacts of the proposed development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), as described in Paragraph 3.13 and detailed further in Appendix A3. Where impacts can be screened out there is no need to progress to a more detailed assessment. The following sections describe the approach to dispersion modelling of road traffic emissions, which has been required for this project.

Modelling Methodology

4.10 Concentrations have been predicted using the ADMS-Roads dispersion model, with vehicle emissions derived using Defra's Emissions Factors Toolkit (EFT) (v13.1) (Defra, 2025b). Details of the model inputs and the model verification are provided in Appendix A5.

Assessment Scenarios

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

- base year 2023;
- the proposed earliest year of construction (2026) without the development;
- 2026 with the peak development-related construction traffic flows;
- the proposed year of first occupation of the proposed development (2028) without the development; and

- 2028 with the development.

4.12 Predictions for 2028 are based on post-pandemic activity levels and assume that a 'new normal' has been reached following the Covid-19 pandemic.

Impact Description

4.13 The approach developed jointly by Environmental Protection UK (EPUK) and the IAQM (Moorcroft and Barrowcliffe et al, 2017) has been used in describing the modelled impacts. The approach identifies impacts at individual receptors based on the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective. Table 4-2 sets out the method for determining the impact descriptor for annual mean concentrations at individual receptors, having been adapted from the table presented in the guidance document. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the GLA target. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 4-2: Air Quality Impact Descriptors for Individual Receptors for All Pollutants [a]

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

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

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

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

Uncertainty

4.14 There are many components that contribute to the uncertainty of modelling predictions. The road traffic emissions dispersion model used in this assessment is dependent upon the traffic data that have been input, which will have inherent uncertainties associated with them. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms.

4.15 An important stage in the process is model verification, which involves comparing the model output with measured concentrations (see Appendix A5). Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2023) concentrations.

4.16 Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. For obvious reasons, the model cannot be verified in the future, and it is necessary to rely on a series of projections provided by DfT and Defra as to what will happen to traffic volumes, background

pollutant concentrations and vehicle emissions. Historic versions of Defra's EFT tended to over-state emissions reductions into the future. However, analyses of the more recent versions of Defra's EFT carried out by AQC (2020a; 2020b) suggest that, on balance, these versions are unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by previous versions of the EFT, especially against a base year of 2016 or later. Whilst such an analysis has not been undertaken by AQC for EFT v13,1, it is considered that using EFT v13.1 for future-year forecasts in this report provides a robust assessment, given that the model has been verified against measurements made in 2023.

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

4.18 Changes were made to the LEZ and Ultra Low Emission Zone (ULEZ) in 2021, and the ULEZ was further expanded in 2023. The changes are described in detail in Appendix A1, and can be expected to significantly reduce NOx emissions in London. Defra's latest EFT is representative of London-Specific policies, now accounting for the LEZ and ULEZ changes in 2021 and 2023.

4.19 This assessment has also considered the GLA target for $PM_{2.5}$. Whilst the overall approach is essentially unchanged from an assessment against the objectives, it must be recognised that there is increased uncertainty as the criterion is numerically reduced. By way of example a 0.5% increase in a PM_{10} concentration with regard to the objective is 0.2 µg/m^3, whereas a 0.5% increase in a $PM_{2.5}$ concentration with regard to the GLA target is just 0.05 µg/m^3. While such increases can be predicted (as the model will generate outputs to many decimal places), such small increases must be treated with increased caution.

Assumptions

4.20 It is necessary to make a number of assumptions when carrying out an air quality assessment; in order to account for some of the uncertainty in the approach, as described above, assumptions made have generally sought to reflect a realistic worst-case scenario. Key assumptions made in carrying out this assessment include:

- the assumption that the proposed development is complete and fully operational in 2028. This will have overestimated the traffic emissions and hence the 2028 concentrations and impacts, as, in reality the development is unlikely to be fully occupied until 2033, thus it will not be generating its full traffic volumes until this year;
- the assumption that the existing offices at the site will be fully occupied for the 2028 without development scenario; and
- that the Heathrow meteorological monitoring station appropriately represents conditions in the study area (this is discussed further in Appendix A5).

Assessment of Significance

Construction Dust Significance

4.21 Guidance from IAQM (2024) is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. This is the latest version of the guidance upon which the assessment methodology set out in the GLA guidance (GLA, 2014) is based (the GLA guidance advises that the latest version of the IAQM guidance should always be used). The assessment thus focuses on determining the appropriate level of mitigation so as to ensure that effects will normally be 'not significant'.

Road Traffic Significance

4.22 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) has therefore been used. The overall significance of the air quality impacts is determined using professional judgement, taking account of the impact descriptors; the experience of the consultants preparing the report is set out in Appendix A4. Full details of the EPUK/IAQM approach are provided in Appendix A3.

'Air Quality Neutral'

4.23 The GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023a) sets out guidance on how an 'air quality neutral' assessment should be undertaken. It also provides a methodology for calculating an offsetting payment if a development is not 'air quality neutral' and it is not possible to identify or agree appropriate and adequate mitigation.

4.24 Appendix A6 sets out the emissions benchmarks from the guidance. The approach has been to calculate the emissions from the development and to compare them with these benchmarks.

5 Baseline Conditions

Relevant Features

5.1 The proposed development is located in Hayes, 450 m to the southwest of Hayes and Hillingdon train station. The application site is bounded by North Hyde Road to the north, Millington Road to the west and south, and an industrial and retail estate to the east. It currently consists of two office buildings, a surface car park and a multi-storey car park.

5.2 There are existing residential properties to the north, on the other side of North Hyde Road (A437), as well as to the southwest adjacent to Dawley Road.

5.3 The proposed development is located within an AQMA and a GLA air quality Focus Area (Hayes Focus Area), as highlighted in Figure 1-1. In addition, the site is also located within an air quality Focus Area ('Hayes Focus Area') defined by LBH in their Air Quality Action Plan (LBH, 2019).

Industrial Sources

5.4 No significant industrial sources have been identified that are likely to affect the proposed development, in terms of air quality.

Local Air Quality Monitoring

5.5 LBH operates twelve automatic monitoring stations within its area; automatic site HIL5 is located approximately 1.1 km east of the proposed development on North Hyde Gardens. The Council also operates a number of NO_2 monitoring sites using diffusion tubes prepared and analysed by Gradko (using the 50% TEA in acetone method). There are seven diffusion tube monitoring sites located within approximately 1.2 km of the proposed development, the closest of which is HILL28, deployed on Blyth Road. Annual mean results for the years 2018 to 2023[6] are summarised in Table 5-1, while results relating to the 1-hour mean objective are summarised in Table 5-2. Exceedances of the objectives are shown in bold. The monitoring locations are shown in Figure 5-1. The monitoring data have been taken from LBH's 2024 Air Quality Annual Status Report (LBH, 2024).

Table 5-1: Summary of Annual Mean NO_2 Monitoring (2018-2023) (µg/m^3)

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
HIL5	Roadside	Hillingdon Hayes	**43.0**	**41.0**	31.0	34.0	34.0	34.0
HILL07	Roadside	Harold Avenue, Hayes	37.7	36.9	28.1	28.8	30.5	28.8
HILL08	Roadside	Phelps Way, Hayes	33.9	33.9	24.1	25.3	26.7	25.9
HILL17	Background	Silverdale Gardens, Hayes	31.0	31.6	24.7	24.2	24.1	22.6
HILL18	Roadside	Blyth Road, Hayes	38.5	37.4	29.9	27.6	28.3	25.7
HILL26	Roadside	R/O Cleave Avenue, Hayes	**42.0**	40.0	28.2	26.8	29.2	27.7

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

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
HILL27	Roadside	Botwell House Primary School	32.5	33.2	24.5	25.3	26.8	26.9
HILL28	Roadside	Blyth Road, Hayes	31.7	31.7	23.0	23.5	27.1	21.4
Objective			**40**					

Table 5-2: Number of Hours With NO_2 Concentrations Above 200 µg/m³

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
HIL5	Roadside	Hillingdon Hayes	12	0	0	0	0	0
Objective			**18**					

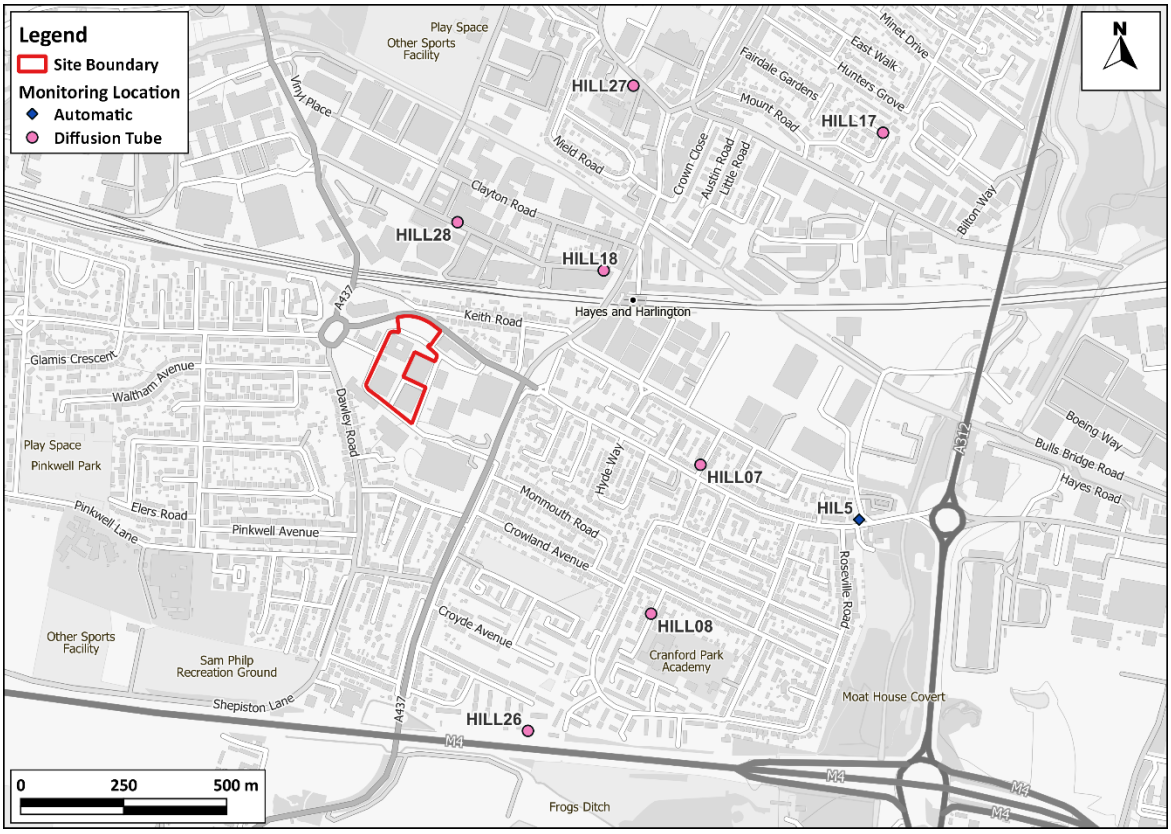

Figure 5-1: Monitoring Locations

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

5.6 There have been no measured exceedances of the annual mean objective since 2019. Concentrations in the study area have decreased between 2018 and 2023. In 2023, concentrations at all monitoring sites within approximately 1.2 km of the proposed development were below the annual mean objective, with concentrations measured at all diffusion tubes well below.

5.7 The HIL5 roadside automatic monitoring station also measured PM_{10} concentrations in 2023. Annual mean results for the years 2018 to 2023 are summarised in Table 5-3, while results relating to the daily mean objective are summarised in Table 5-4. Measured concentrations are well below the relevant objectives.

5.8 The HIL5 monitor does not measure $PM_{2.5}$ concentrations. While there are seven automatic monitors that measure $PM_{2.5}$ within Hillingdon, none of these are within the study area. However, between 2018 and 2023, observed $PM_{2.5}$ concentrations were below the objective across the borough and have been below the GLA target in recent years.

Table 5-3: Summary of Annual Mean PM_{10} Monitoring (2018-2023) (µg/m³)

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
HIL5	Roadside	Hillingdon Hayes	30	28	25	26	30	27
Objective			**40**					

[a] The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

[b] To be met by 2040.

Table 5-4: Number of Days With PM_{10} Concentrations Above 50 µg/m³

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
HIL5	Roadside	Hillingdon Hayes	22	25	16	25	23	16
Objective			**35**					

Exceedances of Limit Value

5.9 There are several AURN monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean NO_2 limit value (Defra, 2025b). Furthermore, Defra's roadside annual mean NO_2 concentrations (Defra, 2025c), which are used to identify and report exceedances of the limit value, identify exceedances of this limit value in 2019 along many roads in London, including a section of the M4 south of the proposed development and the A312 east of the proposed development. The Greater London Urban Area has thus been reported as exceeding the limit value for annual mean NO_2 concentrations. Defra's predicted concentrations for 2023 (Defra, 2020) also identify continued exceedances of the limit value along the A312. However, by 2026 (the first year of construction), there are no exceedances within the study area. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

5.10 Defra's Air Quality Plan requires the GLA to prepare an action plan that will "*deliver compliance in the shortest time possible*", and the 2015 Plan assumed that a CAZ was required. The GLA has already implemented an LEZ and a ULEZ, thus the authority has effectively already implemented the required CAZ. These have been implemented as part of a package of measures including 12 Low Emission Bus Zones, Low Emission Neighbourhoods, the phasing out of diesel buses and taxis and other measures within the Mayor's Transport Strategy.

Background Concentrations

5.11 Estimated background concentrations in the study area are set out in Table 5-5 and are all well below the objectives. A range of values is presented as the study area covers multiple 1x1 km grid squares.

Table 5-5: Estimated Annual Mean Background Pollutant Concentrations in 2023 and 2028 (µg/m³)

Year	NO_2	PM_{10}	$PM_{2.5}$
2023	23.4 – 27.3	13.7 – 15.3	8.2 – 8.4
2026	21.8 – 25.2	13.5 – 15.1	8.0 – 8.2
2028	20.7 – 23.8	13.4 – 14.9	7.9 – 8.1
Objective / GLA target	**40**	**40**	**20/10 [a]**
AMCT	**-**	**-**	**10 [b]**

[a] The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

[b] To be met by 2040

Baseline Dispersion Model Results

5.12 Baseline concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been modelled at each of the existing receptor locations (see Figure 4-2 and Table 4-1 for receptor locations). The results, which cover the existing (2023), construction opening year (2026) and future year (2028) baseline (i.e. Without Scheme), are set out in Table 5-6 for NO_2 and Table 5-7 for PM_{10} and $PM_{2.5}$. The modelled road components of nitrogen oxides have been increased from those predicted by the model based on a comparison with local measurements (see Appendix A5 for the verification methodology).

Table 5-6: Modelled Annual Mean Baseline Concentrations of NO_2 (µg/m³) at Existing Receptors

Receptor	2023	2026 Without Construction	2028 Without Scheme
E1	26.1	23.5	22.0
E2	29.4	25.8	24.0
E3	30.6	26.7	24.9
E4	30.0	26.1	24.2
E5	28.6	25.7	24.0
E6	28.3	25.1	23.5
E7	27.6	24.8	23.3
E8	28.0	25.0	23.5
E9	28.6	25.4	23.8

Receptor	2023	2026 Without Construction	2028 Without Scheme
E10	28.9	25.5	23.7
E11	29.8	26.6	24.8
E12	28.4	25.3	23.7
E13	30.4	27.0	25.1
E14	30.4	27.0	25.1
Objective	**40**		

Table 5-7: Modelled Annual Mean Baseline Concentrations of PM_{10} and $PM_{2.5}$ at Existing Receptors (µg/m³)

Receptor	PM_{10}			$PM_{2.5}$		
	2023	2026 Without Construction	2028 Without Scheme	2023	2026 Without Construction	2028 Without Scheme
E1	14.2	14.0	13.8	8.5	8.2	8.1
E2	14.8	14.5	14.3	8.7	8.5	8.3
E3	15.0	14.7	14.5	8.8	8.6	8.4
E4	15.1	14.9	14.7	8.9	8.7	8.5
E5	15.8	15.5	15.4	8.7	8.5	8.3
E6	14.7	14.4	14.3	8.7	8.4	8.3
E7	14.4	14.2	14.0	8.5	8.3	8.2
E8	14.5	14.2	14.1	8.6	8.3	8.2
E9	14.6	14.3	14.2	8.6	8.4	8.2
E10	14.8	14.5	14.4	8.7	8.5	8.3
E11	15.8	15.6	15.4	8.7	8.5	8.4
E12	14.7	14.4	14.3	8.7	8.4	8.3
E13	16.0	15.7	15.6	8.8	8.6	8.4
E14	16.0	15.7	15.6	8.8	8.6	8.4
Assessment Criterion	**32 [a]**			**20 [b] / 10 [c]**		
AMCT	**-**			**10 [d]**		

[a] While the annual mean PM_{10} objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22 (Defra, 2022). A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of

exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance (Moorcroft and Barrowcliffe et al, 2017).

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

[c] 10 µg/m^3 is the GLA target for annual mean $PM_{2.5}$.

[d] To be met by 2040 and provided here for reference only.

5.13 The predicted annual mean concentrations of NO_2 are below the objective at all receptors in both 2023 and 2028. The annual mean NO_2 concentrations are also below 60 µg/m^3 at all receptors in both 2023 and 2028; it is, therefore, unlikely that the 1-hour mean NO_2 objective will be exceeded (see Paragraph 3.2).

5.14 The predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ are below the relevant criteria, including the GLA target in both 2023 and 2028 at all receptors. The annual mean PM_{10} concentrations are below 32 µg/m^3 and it is, therefore, unlikely that the 24-hour mean PM_{10} objective will be exceeded.

6 Construction Phase Impact Assessment

Construction Traffic

6.1 During the peak construction phase, the construction works will generate 88 HDVs and 77 LDVs (as an Annual Average Daily Traffic (AADT) flow). This is above the relevant screening criteria of 25 AADT for HDVs within an AQMA, as by recommended by EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017). It is, therefore, considered necessary to assess the impacts of traffic emissions during the construction phase.

NO_2

6.2 Predicted annual mean concentrations of NO_2 in 2026 (the first year of construction) for existing receptors are set out in Table 6-1 for both the "Without Construction" and "With Construction" scenarios. The impact at each receptor is also described using the impact descriptors given in Table 4-2.

Table 6-1: Predicted Impacts on Annual Mean NO_2 Concentrations in 2026 (µg/m³)

Receptor	Without Construction	With Construction	% Change [a]	Impact Descriptor
E1	23.5	23.5	0	Negligible
E2	25.8	25.9	0	Negligible
E3	26.7	26.8	0	Negligible
E4	26.1	26.1	0	Negligible
E5	25.7	25.7	0	Negligible
E6	25.1	25.1	0	Negligible
E7	24.8	24.8	0	Negligible
E8	25.0	25.0	0	Negligible
E9	25.4	25.4	0	Negligible
E10	25.5	25.5	0	Negligible
E11	26.6	26.6	0	Negligible
E12	25.3	25.3	0	Negligible
E13	27.0	27.0	0	Negligible
E14	27.0	27.0	0	Negligible
Objective	**40**		-	-

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

6.3 The annual mean NO_2 concentrations are well below the objective at all receptors. Furthermore, as the annual mean NO_2 concentrations are below 60 µg/m³, it is unlikely that the hourly NO_2 objective

(as discussed in paragraph 3.2) will be exceeded at any of the receptors. The changes are all 0% (when rounded to the nearest whole number) and all described as 'Negligible'.

PM_{10} and $PM_{2.5}$

6.4 Predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ in 2026 for existing receptors are set out in Table 6-2 for both the "Without Construction" and "With Construction" scenarios. The impacts at each receptor are also described using the impact descriptors given in Table 4-2.

6.5 As explained in Paragraph 3.8, a different assessment approach is required to determine whether the proposed development complies with the requirement to deliver achievement of the AMCT and PERT. This is considered in Section 10, although the AMCT value is provided in Table 6-2 for reference.

Table 6-2: Predicted Impacts on Annual Mean PM_{10} and $PM_{2.5}$ Concentrations in 2026

Receptor	Annual Mean PM_{10} (µg/m³)				Annual Mean $PM_{2.5}$ (µg/m³)			
	Without Construction	With Construction	% Change [a]	Impact Descriptor	Without Construction	With Construction	% Change [a]	Impact Descriptor
E1	14.0	14.0	0	Negligible	8.2	8.2	0	Negligible
E2	14.5	14.5	0	Negligible	8.5	8.5	0	Negligible
E3	14.7	14.7	0	Negligible	8.6	8.6	0	Negligible
E4	14.9	14.9	0	Negligible	8.7	8.7	0	Negligible
E5	15.5	15.5	0	Negligible	8.5	8.5	0	Negligible
E6	14.4	14.4	0	Negligible	8.4	8.4	0	Negligible
E7	14.2	14.2	0	Negligible	8.3	8.3	0	Negligible
E8	14.2	14.2	0	Negligible	8.3	8.3	0	Negligible
E9	14.3	14.4	0	Negligible	8.4	8.4	0	Negligible
E10	14.5	14.6	0	Negligible	8.5	8.5	0	Negligible
E11	15.6	15.6	0	Negligible	8.5	8.5	0	Negligible
E12	14.4	14.4	0	Negligible	8.4	8.4	0	Negligible
E13	15.7	15.7	0	Negligible	8.6	8.6	0	Negligible
E14	15.7	15.7	0	Negligible	8.6	8.6	0	Negligible
Criterion	**32 [b]**		-	-	**20 [c]**		-	-
AMCT	-		-	-	**10 [d]**		-	-

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

[b] While the annual mean PM_{10} objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22 (Defra, 2022). A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance (Moorcroft and Barrowcliffe et al, 2017).

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

[d] To be met by 2040, and provided here for reference only.

6.6 The annual mean PM_{10} and $PM_{2.5}$ concentrations are well below the relevant criteria at all receptors, with or without the proposed development. Furthermore, as the annual mean PM_{10} concentrations are below 32 µg/m^3, it is unlikely that the 24-hour mean PM_{10} objective will be exceeded at any of the receptors. The changes in concentrations are all 0% (when rounded to the nearest whole number) and impacts are described as 'Negligible'.

6.7 Table 7-3 presents the same $PM_{2.5}$ concentrations as Table 7-2, but assesses the impacts against the GLA target for this pollutant.

Table 6-3: Assessment of Annual Mean $PM_{2.5}$ Concentrations in 2026 against the GLA Target London Only

Receptor	Annual Mean $PM_{2.5}$ (µg/m^3)			
	Without Construction	With Construction	% Change [a]	Impact Descriptor
E1	8.2	8.2	0	Negligible
E2	8.5	8.5	0	Negligible
E3	8.6	8.6	0	Negligible
E4	8.7	8.7	0	Negligible
E5	8.5	8.5	0	Negligible
E6	8.4	8.4	0	Negligible
E7	8.3	8.3	0	Negligible
E8	8.3	8.3	0	Negligible
E9	8.4	8.4	0	Negligible
E10	8.5	8.5	0	Negligible
E11	8.5	8.5	0	Negligible
E12	8.4	8.4	0	Negligible
E13	8.6	8.6	0	Negligible
E14	8.6	8.6	0	Negligible
GLA Target	**10**		**-**	**-**

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

6.8 The annual mean concentrations of $PM_{2.5}$ are well below the GLA target. The changes in concentrations range from 0% (when rounded to the nearest whole number) and impacts are all described as 'Negligible'. Therefore, the proposed development will not delay achievement of the guideline.

On-Site Exhaust Emissions

6.9 The IAQM guidance (IAQM, 2024) states:

"Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur".

6.10 The proposed development is large thus NRMM emissions will mostly occur away from sensitive properties. In line with the GLA's Control of Dust and Emissions During Construction and Demolition SPG, and as describe in Appendix A7, NRMM are expected to comply with emissions standards. Additionally, there will be no idling when vehicles are not in use, and machinery will be located away from sensitive receptors as far as possible. It is judged that there is no risk of significant effects at existing receptors as a result of on-site machinery emissions.

Construction Dust and Particulate Matter Emissions

6.11 The construction works will give rise to a risk of dust impacts during demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see Appendix A2), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition

6.12 There will be a requirement to demolish the current buildings on the site, which have a total volume of more than 75,000 m^3. The method of demolition has not yet been decided. Demolition activities will occur at heights more than 12 m above ground. Based on the example definitions set out in Table A2-1 in Appendix A2, the dust emission class for demolition is considered to be large.

Earthworks

6.13 The characteristics of the soil at the site have been defined using the British Geological Survey's UK Soil Observatory website (British Geological Survey, 2025), as set out in Table 6-4. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 6-4: Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Mixed (Argillaceous [a] – Arenaceous [b] – Rudaceous [c])
European Soil Bureau Description	River Terrace Sand / Gravel, Residual Clay and Loamy Loess
Soil Group	Medium to Light (Silty) to Heavy and Light (Sandy) to Medium (Sandy)
Soil Texture	Silty – Silty Loam and Sandy to Sandy Loam [d]

[a] grain size < 0.06 mm.

[b] grain size 0.06 – 2.0 mm.

[c] grain size > 2.0 mm.

[d] a loam is composed mostly of sand and silt.

6.14 The site covers approximately 24,700 m^2 and most of this will be subject to earthworks, involving removal of the foundations of the demolished buildings and breaking up of paved area. Dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials (such as dry soil). Based on the example definitions set out in Table A2-1 in Appendix A2, the dust emission class for earthworks is considered to be medium.

Construction

6.15 The proposed development involves the construction of six, brick built residential buildings, with a total building volume of more than 75,000 m^3. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials. The construction will take place over a 7-year period. Based on the example definitions set out in Table A2-1 in Appendix A2, the dust emission class for construction is considered to be large.

Trackout

6.16 There will be a maximum of 67 outward heavy vehicle movements in any one day during the construction phase (which may track out dust and dirt). Based on the example definitions set out in Table A2-1 in Appendix A2, the dust emission class for trackout is considered to be large.

6.17 Table 6-5 summarises the dust emission magnitude for the proposed development.

Table 6-5: Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Demolition	Large
Earthworks	Medium
Construction	Large
Trackout	Large

Sensitivity of the Area

6.18 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM_{10} concentrations.

6.19 The IAQM guidance, upon which the GLA's guidance is based, explains that residential properties and hotels are 'high' sensitivity receptors to dust soiling, while offices and places of work are 'medium' sensitivity receptors (Table A2-2 in Appendix A2). Residential properties are also classified as being of 'high' sensitivity to human health effects, while places of work and hotels are classified as being of 'medium' sensitivity. Within 20 m of the site, there are multiple places of work and one residential property, and, within 50 m of the site, multiple places of work, 15 residential properties and a Premier Inn hotel(see Figure 6-1).

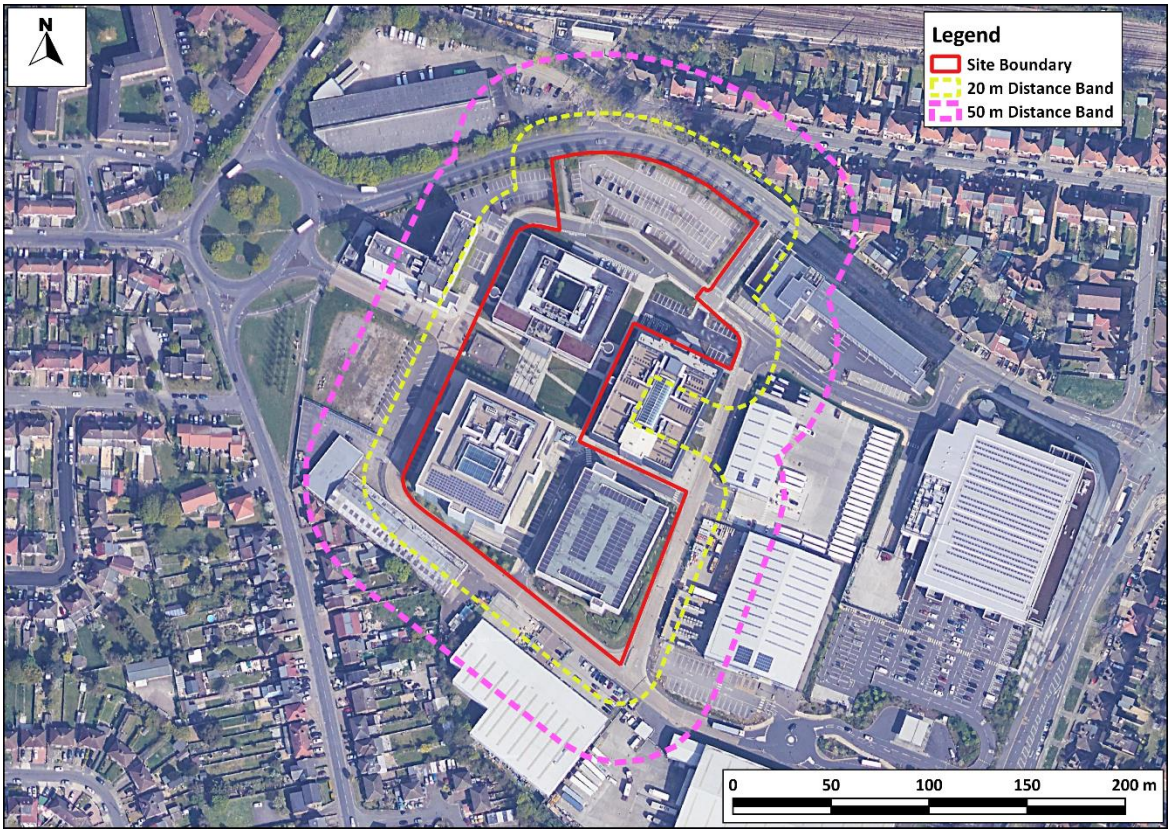

Figure 6-1: 20 m and 50 m Distance Bands around Site Boundary

Imagery ©2025 Airbus, Maxar Technologies.

6.20 The IAQM guidance (IAQM, 2024) explains that there is a risk of material being tracked 250 m from the site exit. The construction traffic is anticipated to travel out of the north exit onto North Hyde Road travelling east, or out of the west exit, travelling either north or south on Dawley Road. There are approximately 85 residential properties within 20 m of the roads along which material could be tracked, as well as a Premier Inn hotel and multiple places of work (see Figure 6-2).

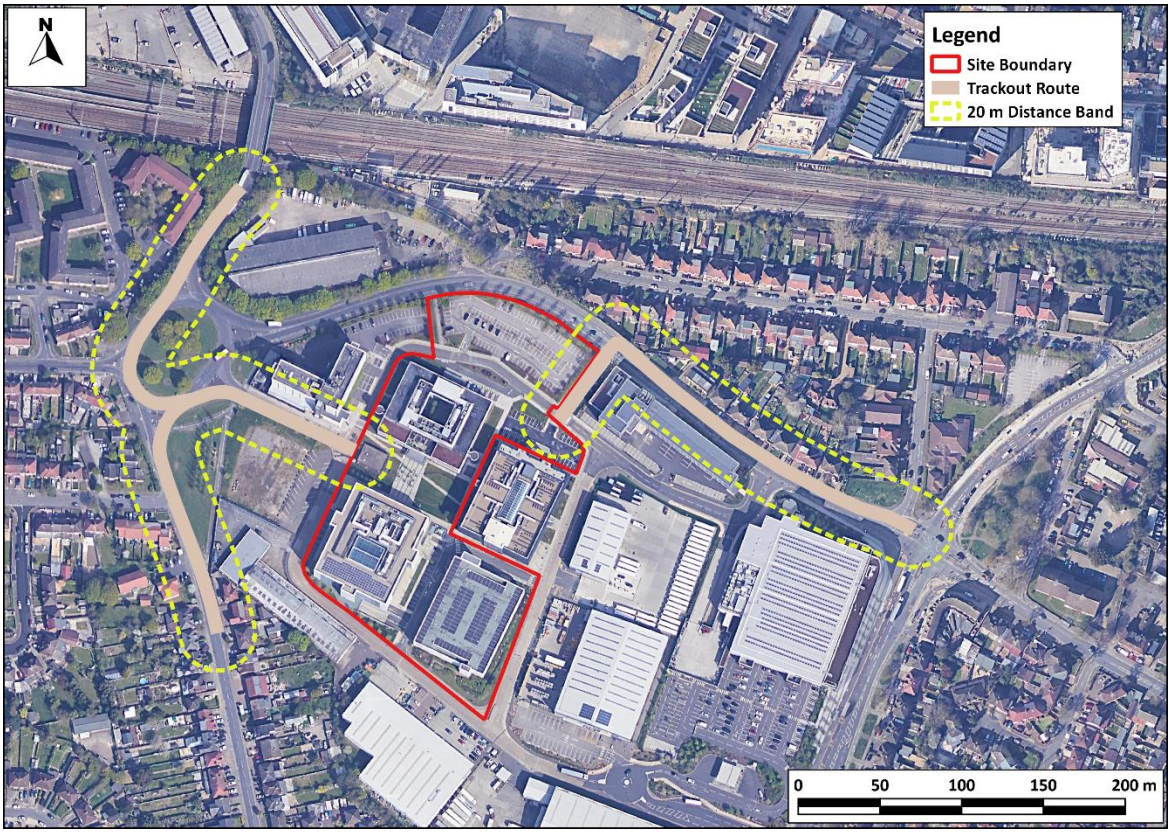

Figure 6-2: 20 m Distance Bands around Roads Used by Construction Traffic within 250 m of the Site Exits

Imagery ©2025 Airbus, Maxar Technologies.

Sensitivity of the Area to Effects from Dust Soiling

6.21 Using the information set out in Paragraph 6.19 and Figure 6-1 alongside the matrix set out in Table A2-3 in Appendix A2, the area surrounding the onsite works is of 'medium' sensitivity to dust soiling. Using the information set out in Paragraph 6.20 and Figure 6-2 alongside the same matrix, the area is of 'high' sensitivity to dust soiling due to trackout.

Sensitivity of the Area to any Human Health Effects

6.22 The matrix in Table A2-4 in Appendix A2 requires information on the baseline annual mean PM_{10} concentration in the area. The maximum predicted baseline PM_{10} concentration at Receptors E1 - E4 and E6 in Figure 4-2 (which are the properties nearest the site boundary and the trackout route) is 14.9 µg/m^3 (Table 5-7), and this value has been used. Using the information set out in Paragraphs 6.19 and Figure 6-1 alongside the matrix in Table A2-4 in Appendix A2, the area surrounding the onsite works is of 'low' sensitivity to human health effects. Using the information set out in Paragraph 6.20 and Figure 6-2 alongside the same matrix, the area surrounding roads along which material may be tracked from the site is also of 'low' sensitivity.

Sensitivity of the Area to any Ecological Effects

6.23 The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

Summary of the Area Sensitivity

6.24 Table 6-6 summarises the sensitivity of the area around the proposed construction works.

Table 6-6: Summary of the Area Sensitivity

Effects Associated With:	Sensitivity of the Surrounding Area	
	On-site Works	Trackout
Dust Soiling	Medium Sensitivity	High Sensitivity
Human Health	Low Sensitivity	Low Sensitivity

Risk and Significance

6.25 The dust emission magnitudes in Table 6-5 have been combined with the sensitivities of the area in Table 6-6 using the matrix in Table A2-6 in Appendix A2, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table 6-7. These risk categories have been used to determine the appropriate level of mitigation as set out in Section 9 (Step 3 of the assessment procedure).

Table 6-7: Summary of Risk of Impacts Without Mitigation

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

6.26 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant' (IAQM, 2024).

7 Operational Phase Impact Assessment

Impacts at Existing Receptors

7.1 The proposed development will result in a reduction in traffic flows (relative to the fully occupied existing office use). Dispersion modelling has therefore been undertaken to determine whether there will be significant improvements in concentrations at existing sensitive receptors and to predict the worst-case concentrations that new sensitive receptors at the site will experience.

NO_2

7.2 Predicted annual mean concentrations of NO_2 in 2028 for existing receptors are set out in Table 7-1 for both the "Without Scheme" and "With Scheme" scenarios. The impact at each receptor is also described using the impact descriptors given in Table 4-2.

Table 7-1: Predicted Impacts on Annual Mean NO_2 Concentrations in 2028 (µg/m³)

Receptor	Without Scheme	With Scheme	% Change [a]	Impact Descriptor
E1	22.0	22.0	0	Negligible
E2	24.0	24.0	0	Negligible
E3	24.9	24.9	0	Negligible
E4	24.2	24.1	0	Negligible
E5	24.0	24.0	0	Negligible
E6	23.5	23.5	0	Negligible
E7	23.3	23.2	0	Negligible
E8	23.5	23.5	0	Negligible
E9	23.8	23.8	0	Negligible
E10	23.7	23.7	0	Negligible
E11	24.8	24.8	0	Negligible
E12	23.7	23.7	0	Negligible
E13	25.1	25.1	0	Negligible
E14	25.1	25.1	0	Negligible
Objective	**40**		-	-

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

7.3 The annual mean NO_2 concentrations are well below the objective at all receptors. The annual mean NO_2 concentrations are also below 60 µg/m³ at all receptors in both 2023 and 2028; it is, therefore, unlikely that the 1-hour mean NO_2 objective will be exceeded (see Paragraph 3.2). The changes are all 0% (when rounded to the nearest whole number) and all described as 'Negligible'.

PM_{10} and $PM_{2.5}$

7.4 Predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ in 2028 for existing receptors are set out in Table 7-2 for both the "Without Scheme" and "With Scheme" scenarios. The impacts at each receptor are also described using the impact descriptors given in Table 4-2.

7.5 As explained in Paragraph 3.8, a different assessment approach is required to determine whether the proposed development complies with the requirement to deliver achievement of the AMCT and PERT. This is considered in Section 10, although the AMCT value is provided in Table 7-2 for reference.

Table 7-2: Predicted Impacts on Annual Mean PM_{10} and $PM_{2.5}$ Concentrations in 2028

Receptor	Annual Mean PM_{10} (µg/m³)				Annual Mean $PM_{2.5}$ (µg/m³)			
	Without Scheme	With Scheme	% Change [a]	Impact Descriptor	Without Scheme	With Scheme	% Change [a]	Impact Descriptor
E1	13.8	13.8	0	Negligible	8.1	8.1	0	Negligible
E2	14.3	14.3	0	Negligible	8.3	8.3	0	Negligible
E3	14.5	14.5	0	Negligible	8.4	8.4	0	Negligible
E4	14.7	14.7	0	Negligible	8.5	8.5	0	Negligible
E5	15.4	15.4	0	Negligible	8.3	8.3	0	Negligible
E6	14.3	14.3	0	Negligible	8.3	8.3	0	Negligible
E7	14.0	14.0	0	Negligible	8.2	8.2	0	Negligible
E8	14.1	14.1	0	Negligible	8.2	8.2	0	Negligible
E9	14.2	14.2	0	Negligible	8.2	8.2	0	Negligible
E10	14.4	14.4	0	Negligible	8.3	8.3	0	Negligible
E11	15.4	15.4	0	Negligible	8.4	8.4	0	Negligible
E12	14.3	14.3	0	Negligible	8.3	8.3	0	Negligible
E13	15.6	15.6	0	Negligible	8.4	8.4	0	Negligible
E14	15.6	15.6	0	Negligible	8.4	8.4	0	Negligible
Criterion	**32 [b]**		**-**	**-**	**20 [c]**		**-**	**-**

Receptor	Annual Mean PM_{10} (µg/m³)				Annual Mean $PM_{2.5}$ (µg/m³)			
	Without Scheme	With Scheme	% Change [a]	Impact Descriptor	Without Scheme	With Scheme	% Change [a]	Impact Descriptor
AMCT	-		-	-	10 [d]		-	-

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

[b] While the annual mean PM_{10} objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22 (Defra, 2022). A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance (Moorcroft and Barrowcliffe et al, 2017).

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

[d] To be met by 2040, and provided here for reference only.

7.6 The annual mean PM_{10} and $PM_{2.5}$ concentrations are well below the relevant criteria at all receptors, with or without the proposed development. Furthermore, as the annual mean PM_{10} concentrations are below 32 µg/m³, it is unlikely that the 24-hour mean PM_{10} objective will be exceeded at any of the receptors. The changes in concentrations are 0% (when rounded to the nearest whole number) and impacts are described as 'Negligible'.

7.7 Table 7-3 presents the same $PM_{2.5}$ concentrations as Table 7-2, but assesses the impacts against the GLA target for this pollutant.

Table 7-3: Assessment of Annual Mean $PM_{2.5}$ Concentrations in 2028 against the GLA Target London Only

Receptor	Annual Mean $PM_{2.5}$ (µg/m³)			
	Without Scheme	With Scheme	% Change [a]	Impact Descriptor
E1	8.1	8.1	0	Negligible
E2	8.3	8.3	0	Negligible
E3	8.4	8.4	0	Negligible
E4	8.5	8.5	0	Negligible
E5	8.3	8.3	0	Negligible
E6	8.3	8.3	0	Negligible
E7	8.2	8.2	0	Negligible
E8	8.2	8.2	0	Negligible
E9	8.2	8.2	0	Negligible
E10	8.3	8.3	0	Negligible

Receptor	Annual Mean $PM_{2.5}$ (µg/m³)			
	Without Scheme	With Scheme	% Change [a]	Impact Descriptor
E11	8.4	8.4	0	Negligible
E12	8.3	8.3	0	Negligible
E13	8.4	8.4	0	Negligible
E14	8.4	8.4	0	Negligible
GLA Target	**10**		-	-

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

7.8 The annual mean concentrations of $PM_{2.5}$ are well below the GLA target. The changes in concentrations are all 0% (when rounded to the nearest whole number) and impacts are all described as 'Negligible'. Therefore, the proposed development will not delay achievement of the guideline.

Impacts of Existing Sources on Future Residents of the Development

7.9 Predicted air quality conditions for future residents of the proposed development, taking account of emissions from the adjacent road network, are set out in Table 7-4 for Receptors P1 to P6 (see Table 4-1 and Figure 4-2 for receptor locations). All of the values are well below the objectives, and $PM_{2.5}$ concentrations are below the GLA Target. Concentrations throughout the site are below the objective. Air quality for future residents within the development will thus be acceptable.

Table 7-4: Predicted Annual Mean Concentrations of NO_2, PM_{10} and $PM_{2.5}$ in 2028 for New Receptors in the Proposed Development (µg/m³)

Receptor	NO_2	PM_{10}	$PM_{2.5}$
P1	22.7	13.9	8.1
P2	22.8	13.9	8.1
P3	22.7	13.9	8.1
P4	23.7	14.3	8.3
P5	23.1	14.1	8.2
P6	22.8	14.0	8.1
Objective / Criterion / Guideline	**40**	**32 [a]**	**20/10 [b]**
AMCT	**-**	**-**	**10 [c]**

[a] While the annual mean PM_{10} objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22 (Defra, 2022). A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance (Moorcroft and Barrowcliffe et al, 2017).

[b] The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

[c] To be met by 2040, and provided here for reference only. As set out in Paragraph 3.8, the assessment to determine whether the proposed development complies with the requirement to deliver achievement of the AMCT and PERT is considered in Section 10.

Significance of Operational Air Quality Effects

7.10 The operational air quality effects without mitigation are judged to be 'not significant'. This professional judgement is made in accordance with the methodology set out in Appendix A3, and takes account of the assessment that:

- pollutant concentrations at worst-case locations within the proposed development will all be well below the objectives, and below the GLA $PM_{2.5}$ Target, thus future residents will experience acceptable air quality;
- pollutant concentrations at all of the selected worst-case existing receptors along the local road network will be well below the air quality objectives, and all of the impacts are predicted to be 'Negligible'; and
- annual mean $PM_{2.5}$ concentrations at existing receptors will not exceed the GLA target with or without the proposed development.

8 'Air Quality Neutral'

8.1 The purpose of the London Plan's requirement that development proposals be 'air quality neutral' is to prevent the gradual deterioration of air quality throughout Greater London. The 'air quality neutrality' of a proposed development, as assessed in this section, does not directly indicate the potential of the proposed development to have significant impacts on human health (this has been assessed separately in the previous section). The air quality neutral assessment has been undertaken using the latest GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023a).

Building Emissions

8.2 The proposed development does not include any combustion plant for the routine provision of electricity, heating or hot water and will thus have no direct building emissions. The proposed development is, therefore, better than air quality neutral in terms of building emissions.

Road Transport Emissions

8.3 TTP Consulting has advised that the proposed development is expected to generate a total of 256,595 car trips per year from the residential units. These values are set out in Table 8-1. Appendix A6 provides the Benchmark Trip Rates for each land use category based on the number of dwellings and Gross Internal Area (GIA) of different land uses. The number of proposed dwellings and GIAs have been provided by Montagu Evans. Table 8-1 shows calculation of the TEB for this development.

8.4 The total development trip rate is less than the TEB. The proposed development is thus air quality neutral in terms of transport emissions.

Table 8-1: Calculation of Transport Benchmarks for the Development [a]

Use Class	GIA (m^2) / dwellings [b]	Benchmark		Annual Trips from Development
		trips/dwelling or m^2/yr	Trips/yr	
Residential [b]	65p2	447	291,444	256,595
Office/Light Industrial	150	16	2,400	0
Total Trip Rate			293,844	256,595

[a] Each trip is 1-way (i.e., a return journey would be two trips). Considers car trips only.

[b] Values are GIAs except for 'residential' which is the number of dwellings.

Summary

8.5 The proposed development will have no direct building emissions and the transport related emissions associated with the proposed development are below the relevant benchmarks. The proposed development therefore complies with the requirement that all new developments in London should be at least air quality neutral.

8.6 As the proposed development is air quality neutral, no damage cost/offsetting payment calculation is required; the offsetting payment is calculated by multiplying the excess emissions above the benchmarks by damage costs, but as the emissions are below the benchmarks, there are no excess emissions to offset.

9 Mitigation

Good Design and Best Practice

9.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required.

9.2 The proposed development incorporates the following good design and best practice measures:

- adoption of a Dust Management Plan (DMP) or Construction Environmental Management Plan (CEMP) to minimise the environmental impacts of the construction works;
- locating play spaces within the proposed development away from nearby roads;
- no balconies proposed on the northernmost residential blocks, which are closest to the A437 (North Hyde Road);
- provision of active electric vehicle charging facilities for 20% of spaces, with passive provision for all remaining spaces, as required by Policy T6.1 of the London Plan;
- provision of a detailed Travel Plan setting out measures to encourage sustainable means of transport (public, cycling and walking), via the promotion of active travel and improved infrastructure and layouts to improve accessibility and safety;
- provision of pedestrian and cycle access to the new development;
- provision of cycle parking, including space for 1,210 bicycles (1,192 long-stay and 18 short-stay spaces), and additionally catering towards wider/adapted bicycles, designed in accordance with the London Cycle Design Standards; and
- use of air-source and solar heating to avoid the need for on-site combustion.

Recommended Mitigation

Construction Impacts

9.3 Measures to mitigate dust emissions will be required during the construction phase of the development in order to minimise effects upon nearby sensitive receptors.

9.4 The site has been identified as a High Risk site during demolition and trackout and Medium Risk during earthworks and construction, as set out in Table 6-7. The GLA's SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014) describes measures that should be employed, as appropriate, to reduce the impacts, along with guidance on what monitoring should be undertaken during the construction phase. This reflects best practice experience and has been used, together with the professional experience of the consultant who has undertaken the dust impact assessment and the findings of the assessment, to draw up a set of measures that should be incorporated into the specification for the works. These measures are described in Appendix A7.

9.5 The mitigation measures should be written into a Dust Management Plan (DMP). The DMP may be integrated into a Code of Construction Practice or the Construction Environmental Management Plan, and may require monitoring. The GLA's guidance suggests that, for a High Risk site, automatic monitoring of particulate matter (as PM_{10}) will be required. It also states that, on certain sites, it may be appropriate to determine the existing (baseline) pollution levels before work begins. However, the

guidance is clear that the Local Authority should advise as to the appropriate air quality monitoring procedure and timescale on a case-by-case basis.

9.6 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local watercourses.

Road Traffic Impacts

9.7 The assessment has demonstrated that the overall air quality effect of the proposed development will be 'not significant'; it will not introduce any new exposure into areas of unacceptable air quality, nor will the development-generated traffic emissions have a significant impact on local air quality. It is, therefore, not considered appropriate to propose further mitigation measures for this development.

9.8 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law). The Council's Air Quality Action Plan will also be helping to deliver improved air quality.

9.9 Policy T6.1 of the London Plan (GLA, 2021) requires at least 20 per cent of all car parking spaces within residential developments to have active electric vehicle charging facilities, with passive provision for all remaining spaces. The proposed development will include this allowance for electric vehicle charging, which will assist in minimising the impacts on the development, as identified in Section 7, as the uptake of electric vehicles increases.

10 Achieving Compliance with the $PM_{2.5}$ Targets

10.1 The monitoring data described in Section 5 demonstrate that annual mean $PM_{2.5}$ concentrations are currently below the AMCT, which is to be met by 2040, across the borough.

10.2 The predicted concentrations presented in Section 7 demonstrate that annual mean $PM_{2.5}$ concentrations are below the AMCT target to be met by 2040 at all receptors, with or without the Proposed Development.

10.3 Defra have set out in their Interim Planning Guidance (2024) two questions designed to consider whether a development supports the AMCT and PERT $PM_{2.5}$ targets. The first question is *"How has exposure to $PM_{2.5}$ been considered when selecting the development site?", whilst the* second question is *"What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors?"*.

10.4 Exposure to $PM_{2.5}$ and ways to minimise $PM_{2.5}$ emissions have been considered in the following ways:

- emissions during the construction phase will be managed through the use of appropriate mitigation measures and set out within a DMP secured by condition;
- the nominated Travel Plan Coordinator will plan a series of events over the course of a year for employees to encourage the use of sustainable transport (such as 'Walking Works', 'National Walking Month and 'Bike Week'); and
- to promote the use of sustainable travel the proposed development includes the provision of cycle parking, including space for 1,210 bicycles (1,192 long-stay and 18 short-stay spaces);
- the promotion of sustainable travel through design accessibility and safety, including accessible pedestrian routes, and catering towards wider/adapted bicycles within the cycle parking spaces, designed in accordance to the London Cycle Design Standards;
- building design such that there are no balconies proposed on the northernmost residential blocks, which are closest to the A437 (North Hyde Road); and
- there are no combustion sources for heat, hot water and electricity.

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

11 Residual Impacts

Construction

11.1 The IAQM guidance, on which the GLA's guidance is based, is clear that, with appropriate mitigation in place, the residual effects will normally be 'not significant'. The mitigation measures set out in Section 9 and Appendix A7 are based on the IAQM or GLA guidance. With these measures in place and effectively implemented the residual effects are judged to be 'not significant'.

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

Road Traffic Impacts

11.3 The residual impacts will be the same as those identified in Section 7. The overall effects of the proposed development will be 'not significant'.

12 Conclusions

12.1 The assessment has considered the impacts of the proposed development on local air quality in terms of dust and particulate matter emissions during construction and emissions from road traffic generated during the construction phase and by the completed and occupied development. It has also identified the air quality conditions that future residents will experience and whether or not the proposed development is air quality neutral (as required by the London Plan). The assessment has been based on measurements made during 2023, and post-pandemic activity and emissions forecasts.

Construction Impacts

12.2 The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise dust emissions. Appropriate measures have been recommended and, with these measures in place, it is expected that any residual effects will be 'not significant'.

12.3 The assessment of construction traffic has demonstrated that pollutant concentrations will be well below the respective objectives at all existing receptors in 2026, with or without the construction activity associated with the proposed development. $PM_{2.5}$ concentrations will also be below the GLA target. Furthermore, the emissions from the construction traffic generated by the proposed development will have a negligible impact on air quality conditions at all existing receptors along the local road network.

12.4 The overall air quality effects during the construction of the proposed development are judged to be 'not significant'.

Operational Impacts

12.5 Air quality conditions for future residents of the proposed development have been shown to be acceptable, with concentrations well below the air quality objectives throughout the site. $PM_{2.5}$ concentrations will also be below the GLA target.

12.6 The assessment has demonstrated that pollutant concentrations will be well below the objectives at all existing receptors in 2028, with or without the proposed development, and that the emissions from the change in traffic flows brought about by the proposed development will have a negligible impact on air quality conditions at all existing receptors along the local road network. $PM_{2.5}$ concentrations will also be below the GLA target.

12.7 The overall operational air quality effects of the proposed development are judged to be 'not significant'.

Air Quality Neutral

12.8 There will be no direct building emissions at the proposed development and transport related emissions associated with the proposed development are below the relevant benchmarks. The proposed development therefore complies with the requirement that all new developments in London should be at least air quality neutral.

Policy Implications

12.9 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 198 of the NPPF, being appropriate for its location both in terms of its effects on the local air quality environment and the air quality conditions for future residents. It is also consistent with Paragraph 199, as it will not affect compliance with relevant limit values or national objectives. Reword as necessary. It is considered that the development complies with the requirements to deliver achievement of the AMCT and PERT by 2040 as appropriate action has been taken to minimise emissions of $PM_{2.5}$ and its precursors.

12.10 The proposed development is compliant with Policy SI 1 of the London Plan in the following ways:

- it will not cause exceedances of legal air quality limits;
- it will not create unacceptable risk of high levels exposure to poor air quality;
- design solutions have been used to address air quality issues rather than post-design mitigation, including design measures to minimise exposure; and
- it is better than air quality neutral.

12.11 The proposed development is also consistent with Policy SO10 and SO11 of LBH's Local Plan Part 1, as it will not worsen air quality and emissions from the proposed development have been minimised. The proposed development is also compliant with Policy EM8 of Part 1 of the Local Plan and Policy DMEI 14 'Air Quality' of Part 2 of the Local Plan as the proposed development will not cause a deterioration in air quality, is air quality neutral and includes measures to promote sustainable transport measures. DMT 1 and DMT 2 of Part 2 of the Local Plan are also complied with as there are no significant adverse impacts on air quality or a deterioration in air quality.

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14 Glossary

AADT	Annual Average Daily Traffic
ADMS-Roads	Atmospheric Dispersion Modelling System model for Roads
AMCT	Annual Mean Concentration Target (for $PM_{2.5}$)
AQAL	Air Quality Assessment Level
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
BEB	Building Emissions Benchmark
CAZ	Clean Air Zone
CEMP	Construction Environmental Management Plan
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMP	Dust Management Plan
EFT	Emissions Factors Toolkit
EPUK	Environmental Protection UK
EU	European Union
EV	Electric Vehicle
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
Focus Area	Location that not only exceeds the annual mean limit value for NO_2 but also has a high level of human exposure
GIA	Gross Internal Floor Area
GLA	Greater London Authority
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
HGV	Heavy Goods Vehicle
HMSO	Her Majesty's Stationery Office
IAQM	Institute of Air Quality Management
JAQU	Joint Air Quality Unit
kph	Kilometres Per hour

LAQM	Local Air Quality Management
LBH	London Borough of Hillingdon
LDV	Light Duty Vehicles (<3.5 tonnes)
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
µg/m^3	Microgrammes per cubic metre
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
NRMM	Non-road Mobile Machinery
OEP	Office for Environmental Protection
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
OLEV	Office for Low Emission Vehicles
PERT	Population Exposure Reduction Target (for $PM_{2.5}$)
PHV	Private Hire Vehicle
PM_{10}	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
PPG	Planning Practice Guidance
RDE	Real Driving Emissions
SCR	Selective Catalytic Reduction
SPD	Supplementary Planning Document
Standards	A nationally defined set of concentrations for nine pollutants based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups
TEA	Triethanolamine – used to absorb nitrogen dioxide
TEB	Transport Emissions Benchmark
TfL	Transport for London

ULEZ	Ultra Low Emission Zone
WHO	World Health Organisation
ZEC	Zero Emission Capable

15 Appendices

A1 London-Specific Policies and Measures

London Plan

Design-led Approach

A1.1 Policy D3 on optimising site capacity through the design-led approach states that "*development proposals should…help prevent or mitigate the impacts of noise and poor air quality*". The explanatory text around this Policy states the following:

"*Measures to design out exposure to poor air quality and noise from both external and internal sources should be integral to development proposals and be considered early in the design process. Characteristics that increase pollutant or noise levels, such as poorly-located emission sources, street canyons and noise sources should also be designed out wherever possible. Optimising site layout and building design can also reduce the risk of overheating as well as minimising carbon emissions by reducing energy demand*".

Development Plans

A1.2 Policy SI 1 of the London Plan (GLA, 2021) states the following regarding strategic development plans:

"*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.*"

Electric Vehicle Charging

A1.3 To support the uptake of zero tailpipe emission vehicles, Policy T6.1 of the London Plan states:

"*All residential car parking spaces must provide infrastructure for electric or Ultra-Low Emission vehicles. At least 20 per cent of spaces should have active charging facilities, with passive provision for all remaining spaces*".

London Environment Strategy

A1.4 The air quality chapter of the London Environment Strategy sets out three main objectives, each of which is supported by sub-policies and proposals. The Objectives and their sub-policies are set out below:

"*Objective 4.1: Support and empower London and its communities, particularly the most disadvantaged and those in priority locations, to reduce their exposure to poor air quality.*

- Policy 4.1.1 Make sure that London and its communities, particularly the most disadvantaged and those in priority locations, are empowered to reduce their exposure to poor air quality
- Policy 4.1.2 Improve the understanding of air quality health impacts to better target policies and action

Objective 4.2: Achieve legal compliance with UK and EU limits as soon as possible, including by mobilising action from London Boroughs, government and other partners

- Policy 4.2.1 Reduce emissions from London's road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport

- Policy 4.2.2 Reduce emissions from non-road transport sources, including by phasing out fossil fuels
- Policy 4.2.3 Reduce emissions from non-transport sources, including by phasing out fossil fuels
- Policy 4.2.4 The Mayor will work with the government, the London boroughs and other partners to accelerate the achievement of legal limits in Greater London and improve air quality
- Policy 4.2.5 The Mayor will work with other cities (here and internationally), global city and industry networks to share best practice, lead action and support evidence based steps to improve air quality

Objective 4.3: Establish and achieve new, tighter air quality targets for a cleaner London by transitioning to a zero emission London by 2050, meeting world health organization health-based guidelines for air quality

- Policy 4.3.1 The Mayor will establish new targets for $PM_{2.5}$ and other pollutants where needed. The Mayor will seek to meet these targets as soon as possible, working with government and other partners
- Policy 4.3.2 The Mayor will encourage the take up of ultra low and zero emission technologies to make sure London's entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines
- Policy 4.3.3 Phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality
- Policy 4.3.4 Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces"

A1.5 While the policies targeting transport sources are significant, there are less obvious ones that will also require significant change. In particular, the aim to phase out fossil-fuels from building heating and cooling and from NRMM will demand a dramatic transition.

Low Emission Zone (LEZ)

A1.6 The LEZ was implemented as a key measure to improve air quality in Greater London. It entails charges for vehicles entering Greater London not meeting certain emissions criteria, and affects diesel-engined lorries, buses, coaches, large vans, minibuses and other specialist vehicles derived from lorries and vans. Since 1 March 2021, a standard of Euro VI has applied for HGVs, buses and coaches, while a standard of Euro 3 has applied for large vans, minibuses and other specialist diesel vehicles since 2012.

Ultra Low Emission Zone (ULEZ)

A1.7 London's Ultra-Low Emission Zone (ULEZ), originally covering the congestion charge zone, came into force in April 2019, and was expanded outward to the North and South Circular Roads in October 2021. The ULEZ was expanded again to cover all London Boroughs (excluding the M25) at the end of August 2023. The ULEZ currently operates 24 hours a day, 7 days a week. All cars, motorcycles, vans and minibuses are required to meet exhaust emission standards (ULEZ standards) or pay an additional daily charge to travel within the zone. The ULEZ standards are Euro 3 for motorcycles, Euro 4 for petrol cars, vans and minibuses and Euro 6 for diesel cars, vans and minibuses. The ULEZ does not include any requirements relating to heavy vehicle (HGV, coach and bus) emissions, as these are addressed by the amendments to the LEZ described in Paragraph A1.6.

Other Measures

A1.8 Since 2018, all taxis presented for licencing for the first time had to be zero emission capable (ZEC). This means they must be able to travel a certain distance in a mode which produces no air pollutants, and all private hire vehicles (PHVs) presented for licensing for the first time had to meet Euro 6 emissions standards. Since January 2020, all newly manufactured PHVs presented for licensing for the first time had to be ZEC (with a minimum zero emission range of 10 miles). The Mayor's aim is that the entire taxi and PHV fleet will be made up of ZEC vehicles by 2033.

A1.9 The Mayor has also proposed to make sure that TfL leads by example by cleaning up its bus fleet, implementing the following measures:

- TfL will procure only hybrid or zero emission double-decker buses from 2018;
- a commitment to providing 3,100 double decker hybrid buses by 2019 and 300 zero emission single-deck buses in central London by 2020;
- introducing 12 Low Emission Bus Zones by 2020;
- investing £50m in Bus Priority Schemes across London to reduce engine idling; and
- retrofitting older buses to reduce emissions (selective catalytic reduction (SCR) technology has already been fitted to 1,800 buses, cutting their NOx emissions by around 88%).

A2 Construction Dust Assessment Procedure

A2.1 The criteria developed by IAQM (2024), upon which the GLA's guidance is based, divide the activities on construction sites into four types to reflect their different potential impacts. These are:

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

A2.2 The assessment procedure includes the four steps summarised below:

STEP 1: Screen the Need for a Detailed Assessment

A2.3 An assessment is required where there is a human receptor within 250 m of the boundary of the site and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s), or where there is an ecological receptor within 50 m of the boundary of the site and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

A2.4 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is negligible and that any effects will be 'not significant'. No mitigation measures beyond those required by legislation will be required.

STEP 2: Assess the Risk of Dust Impacts

A2.5 A site is allocated to a risk category based on two factors:

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

A2.6 These two factors are combined in Step 2C, which is to determine the risk of dust impacts with no mitigation applied. The risk categories assigned to the site may be different for each of the four potential sources of dust (demolition, earthworks, construction and trackout).

Step 2A – Define the Potential Dust Emission Magnitude

A2.7 Dust emission magnitude is defined as either 'Small', 'Medium', or 'Large'. The IAQM guidance explains that this classification should be based on professional judgement, but provides the examples in Table A2-1.

Table A2-1: Examples of How the Dust Emission Magnitude Class May be Defined

Class	Examples
Demolition	
Large	Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >12 m above ground level

Class	Examples
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months
Earthworks	
Large	Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
Medium	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height.
Small	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.
Construction	
Large	Total building volume >75,000 m^3, on site concrete batching; sandblasting
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching
Small	Total building volume <12,000 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	20-50 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	<20 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

A2.8 The sensitivity of the area is defined taking account of a number of factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters to reduce the risk of wind-blown dust.

A2.9 The first requirement is to determine the specific sensitivities of local receptors. The IAQM guidance recommends that this should be based on professional judgment, taking account of the principles in Table A2-2. These receptor sensitivities are then used in the matrices set out in Table A2-3, Table A2-4

and Table A2-5 to determine the sensitivity of the area. Finally, the sensitivity of the area is considered in relation to any other site-specific factors, such as the presence of natural shelters etc., and any required adjustments to the defined sensitivities are made.

Step 2C – Define the Risk of Impacts

A2.10 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 IAQM guidance provides the matrix in Table A2-6 as a method of assigning the level of risk for each activity.

STEP 3: Determine Site-specific Mitigation Requirements

A2.11 The IAQM guidance provides a suite of recommended and desirable mitigation measures which are organised according to whether the outcome of Step 2 indicates a low, medium, or high risk. The list provided in the IAQM guidance has been used as the basis for the requirements set out in Appendix A7.

STEP 4: Determine Significant Effects

A2.12 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'.

A2.13 The IAQM guidance recognises that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. The local community may therefore experience occasional, short-term dust annoyance. The scale of this would not normally be considered sufficient to change the conclusion that the effects will be 'not significant'.

Table A2-2: Principles to be Used When Defining Receptor Sensitivities

Class	Principles	Examples
Sensitivities of People to Dust Soiling Effects		
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 there is property that 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 horticulture), footpaths, short term car parks and roads
Sensitivities of People to the Health Effects of PM_{10}		
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.	may include 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
Sensitivities of Receptors to Ecological Effects		
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 with dust sensitive features
Medium	locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or	Sites of Special Scientific Interest with dust sensitive features

Class	Principles	Examples
	locations with a national designation where the features may be affected by dust deposition	
Low	locations with a local designation where the features may be affected by dust deposition	Local Nature Reserves with dust sensitive features

Table A2-3: Sensitivity of the Area to Dust Soiling Effects on People and Property[7]

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
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

Table A2-4: Sensitivity of the Area to Human Health Effects[7]

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low

[7] For demolition, earthworks and construction, distances are taken either from the dust source or from the boundary of the site. For trackout, distances are measured from the sides of roads used by construction traffic. Without mitigation, trackout may occur from roads up to 250 m, 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 of the road.

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table A2-5: Sensitivity of the Area to Ecological Effects[7]

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

Table A2-6: 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	Medium 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			

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

A3 EPUK & IAQM Planning for Air Quality Guidance

A3.1 The guidance issued by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

Air Quality as a Material Consideration

"Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- *the severity of the impacts on air quality;*
- *the air quality in the area surrounding the proposed development;*
- *the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and*
- *the positive benefits provided through other material considerations".*

Recommended Best Practice

A3.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

"The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions".

A3.3 The guidance sets out a number of good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m^2 of commercial floorspace;
- are carried out on land of 1 ha or more.

A3.4 The good practice principles are that:

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new "street canyon", as this inhibits pollution dispersion;
- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;

- The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1000 m^2 of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- All gas-fired boilers to meet a minimum standard of <40 mgNOx/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:
  - Spark ignition engine: 250 mgNOx/Nm^3;
  - Compression ignition engine: 400 mgNOx/Nm^3;
  - Gas turbine: 50 mgNOx/Nm^3.
- A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNOx/Nm^3 and 25 mgPM/Nm^3.

A3.5 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

"It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the "damage cost approach" used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential".

A3.6 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

Screening

Impacts of the Local Area on the Development

"There may be a requirement to carry out an air quality assessment for the impacts of the local area's emissions on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should take into account:

- the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;
- the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;
- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO_2), that would cause unacceptably high exposure for users of the new development; and
- the presence of a source of odour and/or dust that may affect amenity for future occupants of the development".

Impacts of the Development on the Local Area

A3.7 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha.

A3.8 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A3.9 If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of roads (i.e. changing the proximity of receptors to traffic lanes) where the change is 5m or more and the road is within an AQMA;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;

- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and
- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A3.10 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A3.11 On combustion processes (including standby emergency generators and shipping) where there is a risk of impacts at relevant receptors, the guidance states that:

"Typically, any combustion plant where the single or combined NOx emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NOx gas boiler or a 30kW CHP unit operating at <95mg/Nm^3.

In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.

Conversely, where existing NO_2 concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable".

A3.12 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

"The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive 'trigger' for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality".

A3.13 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

"The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer".

A3.14 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

Assessment of Significance

A3.15 There is no official guidance in the UK in relation to development control on how to describe the nature of air quality impacts, nor how to assess their significance. The approach within the EPUK/IAQM guidance has, therefore, been used in this assessment. This approach involves a two stage process:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts.

A3.16 The guidance recommends that the assessment of significance should be based on professional judgement, with the overall air quality impact of the development described as either 'significant' or 'not significant'. In drawing this conclusion, the following factors should be taken into account:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts;
- the potential for cumulative impacts and, in such circumstances, several impacts that are described as 'slight' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, 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; and
- the judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.

A3.17 The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the residents of any new development where the air quality is such that an air quality objective is not met will be judged as significant. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.

A3.18 A judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix A4.

A4 Professional Experience

Dr Denise Evans, BSc (Hons) PhD MIEnvSc MIAQM

Dr Evans is a Technical Director with AQC, with more than 25 years' relevant experience. She has prepared air quality review and assessment reports for local authorities, and has appraised local authority air quality assessments on behalf of the UK governments, and provided support to the Review and Assessment helpdesk. She has extensive modelling experience, completing air quality and odour assessments to support applications for a variety of development sectors including residential, mixed use, urban regeneration, energy, commercial, industrial, and road schemes, assessing the effects of a range of pollutants against relevant standards for human and ecological receptors. Denise has acted as an Expert Witness and is a Member of the Institute of Air Quality Management.

Julia Burnell, MEnvSci (Hons) MIEnvSc MIAQM

Miss Burnell is a Principal Consultant with AQC with over nine years' experience in the field of air quality. She has experience of undertaking a range of air quality assessments for power, transportation, and mixed-use development projects both in the UK and internationally. She is also experienced at preparing environmental permit applications for medium combustion plant/specified generator sites and has commissioned and maintained numerous ambient air quality monitoring surveys. Prior to her work with AQC, Julia completed an MEnvSci (Hons) in Environmental Science (four-year integrated master's). She is a Member of both the Institute of Air Quality Management and the Institution of Environmental Sciences.

Dr Rosie Watts, BSc (Hons) MSc PhD MIEnvSc

Dr Watts joined AQC in 2024 as an Assistant Consultant. Following a degree in Physical Geography, Rosie completed an ESRC-funded PhD studying wild and prescribed fires, collaborating with industry stakeholders. Rosie brings with her a background in climate change and its related risks, where throughout her academic career, she developed an interest in air quality, including in relation to wildfire events. She is currently gaining experience undertaking a variety of air quality assessment, ranging in scope from standalone assessments to contributions to EIA developments. As well as including a range of assessment subjects and techniques, including assessment of both human health and ecological impacts, and the use of ADMS-Roads and ADMS-6. She is a Member of the Institution of Environmental Sciences.

A5 Modelling Methodology

Model Inputs

A5.1 Predictions have been carried out using the ADMS-Roads dispersion model (v5). The model requires the user to provide various input data, including emissions from each section of road and the road characteristics (including road width where applicable). Vehicle emissions have been calculated based on vehicle flow, composition and speed data using the EFT (Version 13.1) published by Defra (2025b). Model input parameters are summarised in Table A5-1 and, where considered necessary, discussed further below.

Table A5-1: Summary of Model Inputs

Model Parameter	Value Used
Terrain Effects Modelled?	No
Variable Surface Roughness File Used?	No
Urban Canopy Flow Used?	Yes
Advanced Street Canyons Modelled?	No
Noise Barriers Modelled?	No
Meteorological Monitoring Site	Heathrow
Meteorological Data Year	2023
Dispersion Site Surface Roughness Length (m)	0.5
Dispersion Site Minimum MO Length (m)	30
Met Site Surface Roughness Length (m)	0.2
Met Site Minimum MO Length (m)	30
Gradients?	No

A5.2 AADT flows and the proportions of HDVs have been provided by TTP Consulting, who have undertaken the transport assessment work for the proposed development. Traffic speeds have been estimated based on professional judgement, taking account of the road layout, speed limits and the proximity to a junction. The traffic data used in this assessment is summarised in Table A5-2. Diurnal and monthly flow profiles for the traffic have been derived from the national profiles published by DfT (2024).

Table A5-2: Summary of Construction and Operational Traffic Data used in the Assessment

Road Link	2023		2026 (Without Construction)		2026 (With Construction)		2028 (Without Scheme)		2028 (With Scheme)	
	AADT	%HDV	AADT	%HDV	AADT	%HDV	AADT	%HDV	AADT	%HDV
Dawley Road (N)	27,214	12.6	27,214	12.6	27,230	12.6	27,452	12.6	27,377	12.6
Bourne Ave	4,507	8.4	4,507	8.4	4,507	8.4	4,507	8.4	4,507	8.4
Dawley Road (S)	19,812	6.7	19,812	6.7	19,878	6.9	19,985	6.7	19,930	6.7
North Hyde Road (W)	13,705	16.2	13,705	16.2	13,804	16.4	13,762	16.1	13,744	16.1
North Hyde Road (M)	13,348	9.7	13,348	9.7	13,447	10.0	13,521	9.6	13,466	9.6
Station Road (N)	15,489	15.0	15,489	15.0	15,489	15.0	15,624	14.9	15,581	14.9
North Hyde Road (E)	17,552	6.2	17,552	6.2	17,651	6.4	17,705	6.1	17,657	6.1
Station Road (M)	14,003	13.9	14,003	13.9	14,003	13.9	14,118	13.8	14,082	13.9
Station Road (S)	13,447	10.9	13,447	10.9	13,447	10.9	13,565	10.8	13,528	10.9
Millington Road (W)	4,790	2.5	4,790	2.5	4,955	4.2	5,258	2.3	5,109	2.3
Millington Road (E)	4,409	10.2	4,409	10.2	4,409	10.2	4,815	9.4	4,686	9.6
Bedwell Gardens	1,618	8.4	1,618	8.4	1,618	8.4	1,618	8.4	1,618	8.4
A312 (N)	61,037	4.3	61,037	4.3	61,086	4.4	61,114	4.3	61,090	4.3
A312 (S)	59,932	6.2	59,932	6.2	59,981	6.2	60,008	6.2	59,984	6.2

15.1 Figure A5-1 shows the road network included within the main model, along with the speed at which each link was modelled.

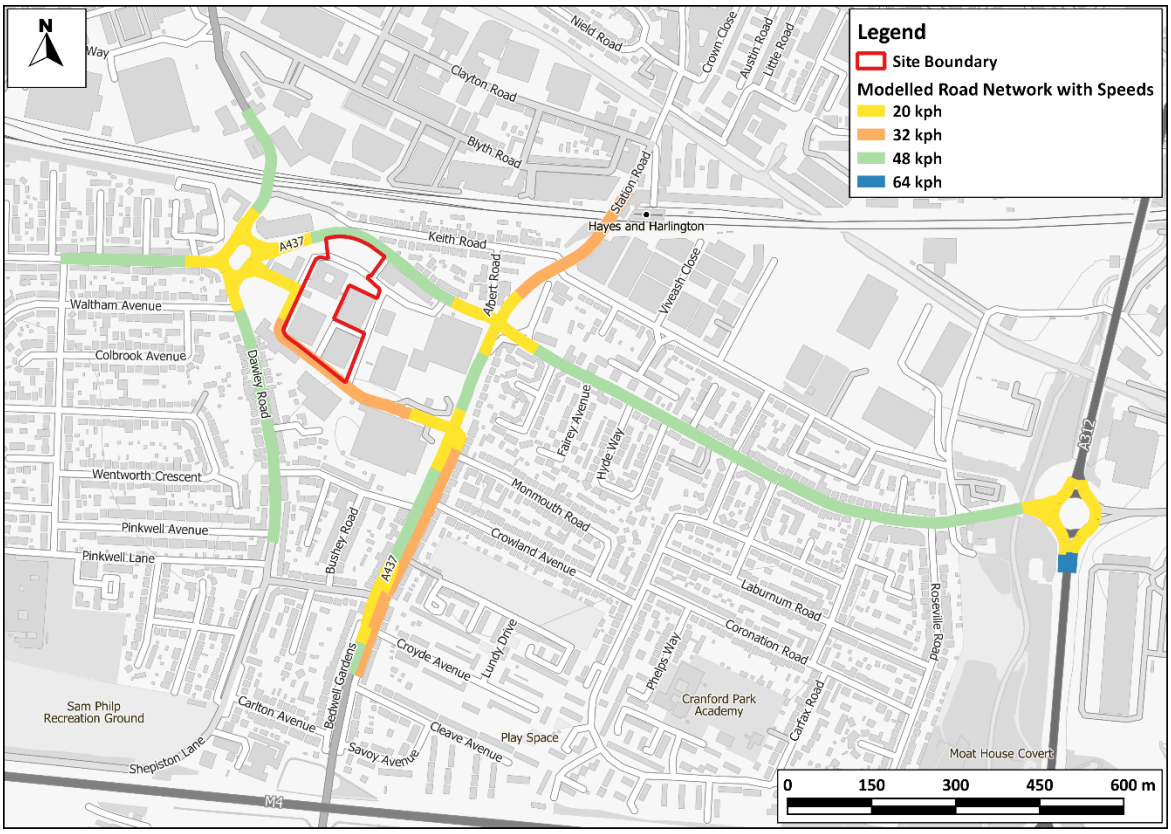

Figure A5-1: Modelled Road Network & Speed for Main Study Area

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

A5.3 Hourly sequential meteorological data in sectors of 10 degrees from Heathrow for 2023 have been used in the model. The Heathrow meteorological monitoring station is located at Heathrow Airport, approximately 2.8 km to the south of the proposed development. Both the application site and the Heathrow meteorological monitoring station are located in the outer London where they will be influenced by the effects of inland meteorology over flat-lying, urban topography. Measurements from this site are considered to provide the most robust basis to predict meteorology within the model domain. A wind rose for the site for the year 2023 is provided in Figure 5-2. Raw data were provided by the Met Office and processed by AQC for use in ADMS.

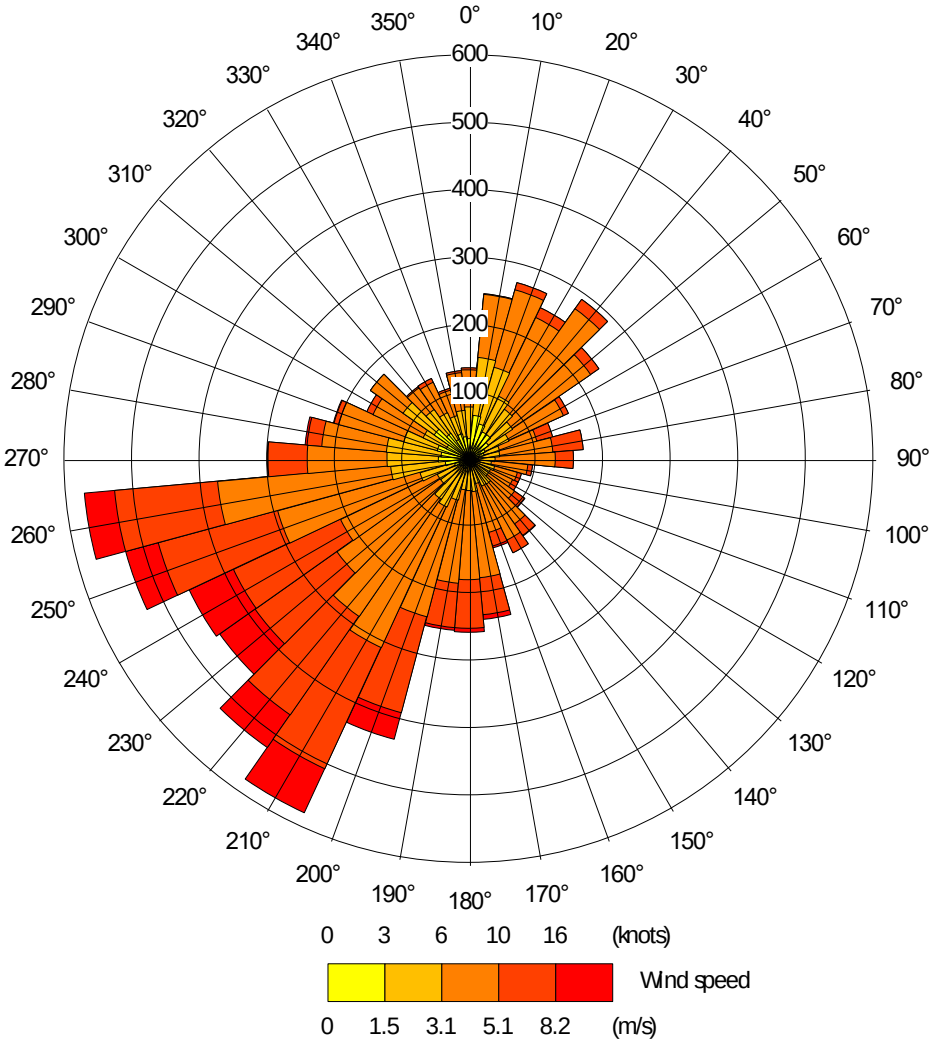

Figure A5-2: Wind Rose

NO_2 Model Verification

A5.4 Evidence collected over many years has shown that, in most urban areas, dispersion modelling relying upon Defra's EFT has tended to systematically under-predict roadside NO_2 concentrations. To account for this, it is necessary to adjust the model against local measurements. The model has been run to predict annual mean NO_2 concentrations during 2023 at the HILL16, HILL39, and HILL40 diffusion tube monitoring sites. These sites have been selected because of their proximity to the proposed development site and their location adjacent to roads for which 2023 traffic data are available. Site HIL5 and HILL07, while located close to the study area, have been excluded from the model verification as data for all adjacent roads are not available (North Hyde Gardens and Harold Avenue).The exclusion of adjacent roads would result in an under-prediction and an unrealistically high model verification factor.

A5.5 The model verification study area is shown in Figure A5-3.

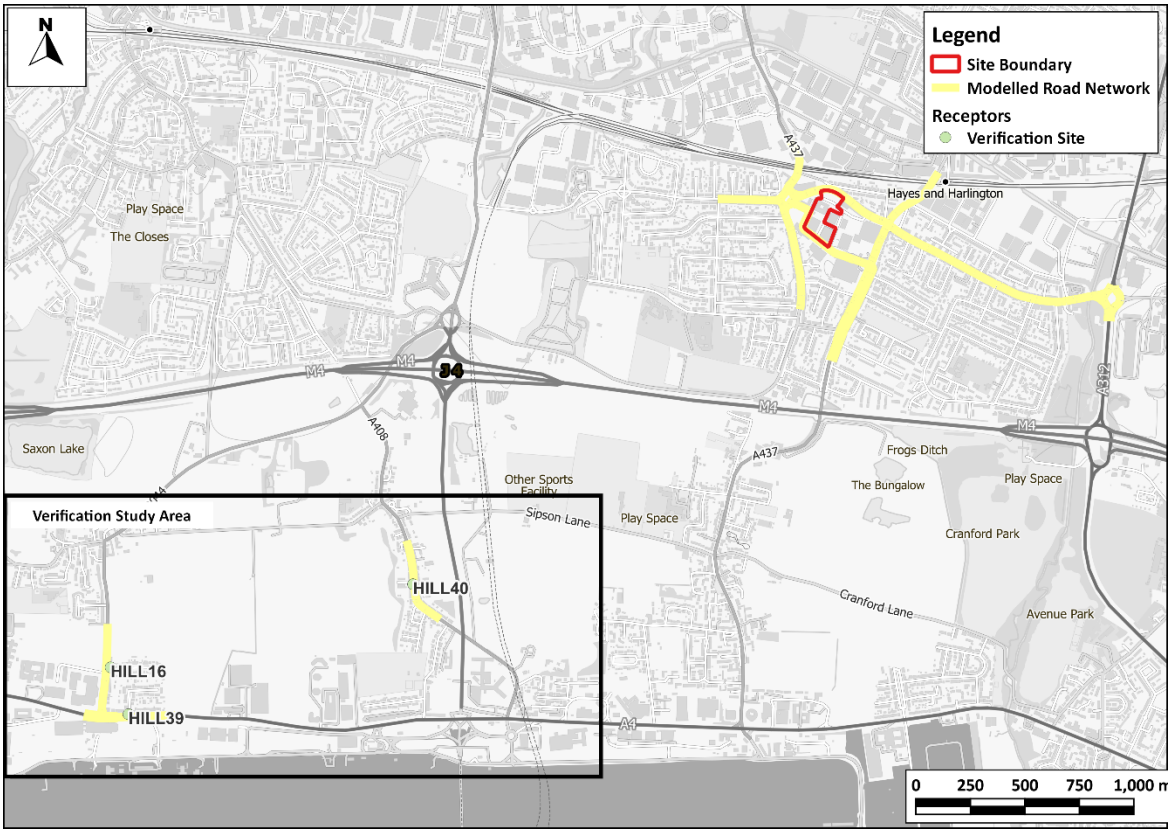

Figure A5-3: Model Verification Study Area Location in Relation to Main Study Area

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

15.2 Figure A5-4 shows the road network included within the model for the purpose of verification, along with the speed at which each link was modelled.

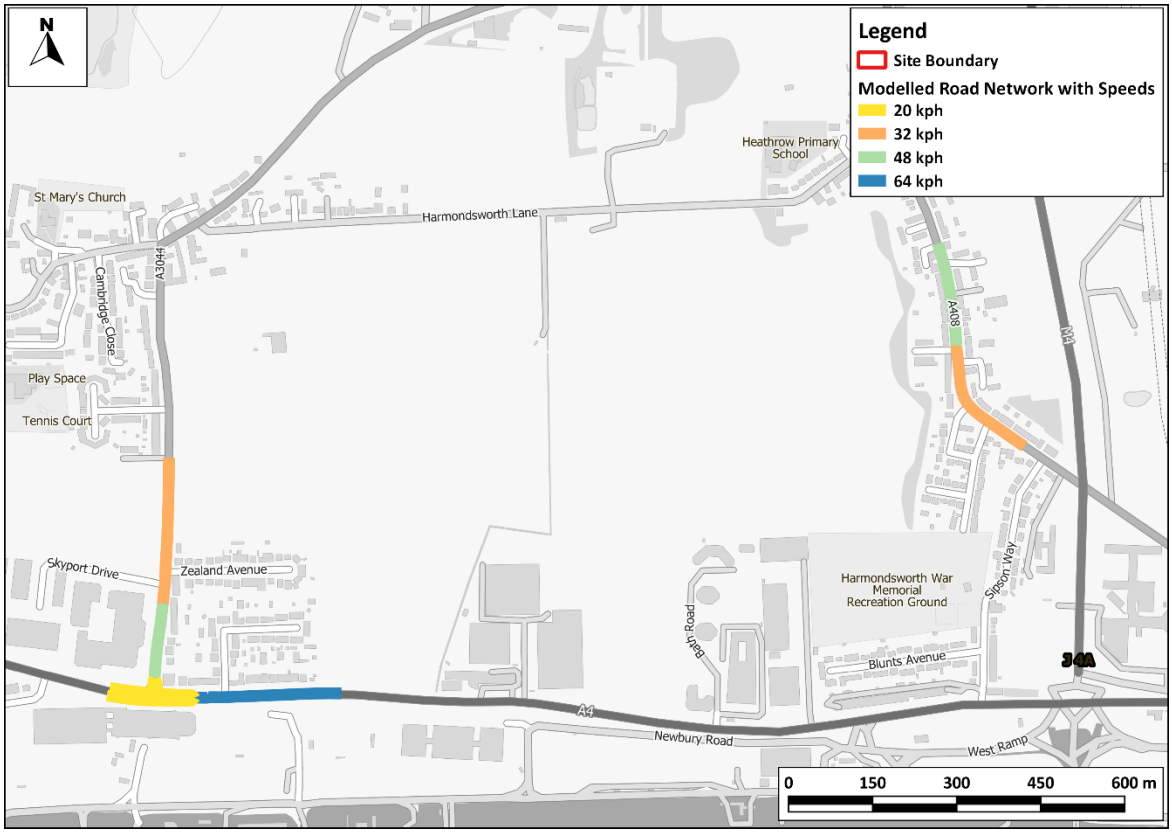

Figure A5-4: Modelled Road Network & Speed for Verification Sites

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

Background Concentrations

A5.6 The background annual mean NO_2 concentration used in the model verification 25.2 µg/m^3 at HILL16, 29.6 µg/m^3 at HILL39, and 27.4 µg/m^3 at HILL40 having been derived from the national maps using the same approach as described in Paragraph 4.7.

Traffic Data

A5.7 AADT flows and the proportions of HDVs for the roads adjacent to the monitoring sites for 2023 have all been determined from the interactive web-based map provided by the DfT (DfT, 2025). The roads modelled are: the A3044 (Holloway Lane) adjacent to the HILL16 monitoring site; A3044 (Bath Road) adjacent to the HILL39 monitoring site; and A408 adjacent to the HILL40 monitoring site. Traffic data used in the model verification are summarised in Table A5-3.

Table A5-3: 2023 AADT Traffic Data used in the Model Verification

Road Link	AADT	%HDV
A3044 (Holloway Lane)	9,792	5.1
A3044 (Bath Road)	17,299	8.9
A408	6,507	5.3

Verification Factor

A5.8 Most NO_2 is produced in the atmosphere by reaction of nitric oxide (NO) with ozone. It is therefore most appropriate to verify the model in terms of primary pollutant emissions of nitrogen oxides (NOx = NO + NO_2).

A5.9 The model output of road-NOx (i.e. the component of total NOx coming from road traffic) has been compared with the 'measured' road-NOx. Measured road-NOx has been calculated from the measured NO_2 concentrations and the predicted background NO_2 concentration using the NOx from NO_2 calculator (Version 9.1) available on the Defra LAQM Support website (Defra, 2025b).

A5.10 The unadjusted model has under predicted the road-NOx contribution; this is a common experience with this and most other road traffic emissions dispersion models. An adjustment factor has been determined as the slope of the best-fit line between the 'measured' road contribution and the model derived road contribution, forced through zero (Figure A5-5). The calculated adjustment factor of 2.362 has been applied to the modelled road-NOx concentration for each receptor to provide adjusted modelled road-NOx concentrations.

A5.11 The total NO_2 concentrations have then been determined by combining the adjusted modelled road-NOx concentrations with the predicted background NO_2 concentration within the NOx to NO_2 calculator. Figure A5-6 compares final adjusted modelled total NO_2 at each of the monitoring sites to measured total NO_2 and shows a close agreement.

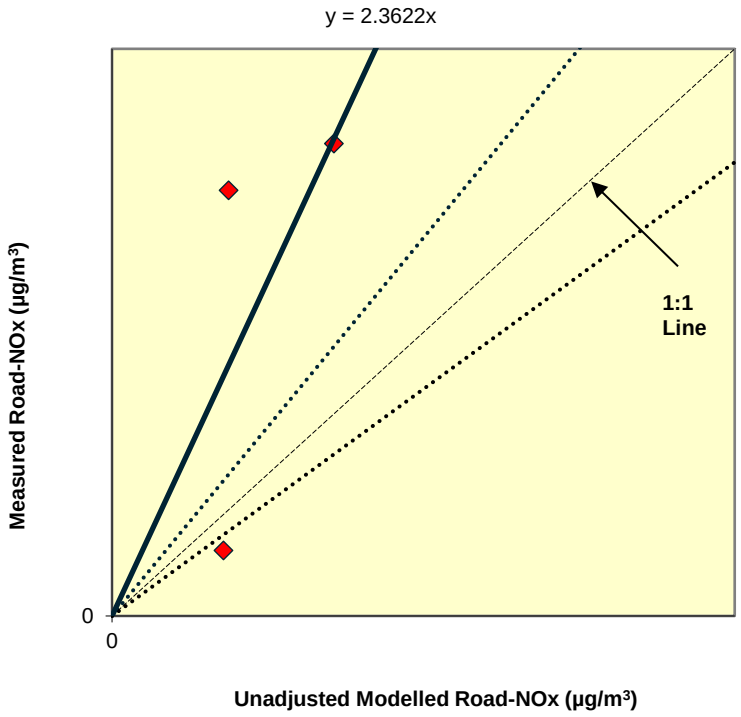

Figure A5-5: Comparison of Measured Road NOx to Unadjusted Modelled Road NOx Concentrations. The dashed lines show ± 25%.

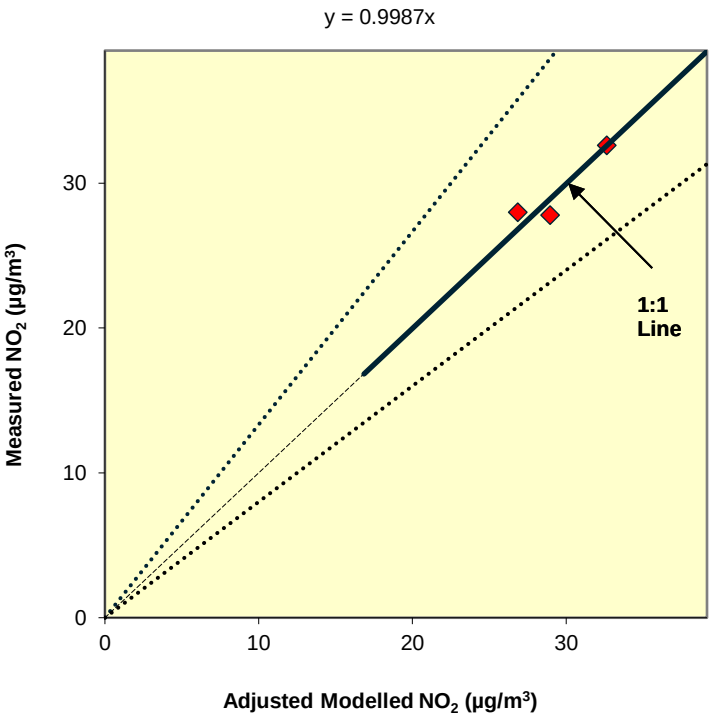

Figure A5-6: Comparison of Measured Total NO_2 to Final Adjusted Modelled Total NO_2 Concentrations. The dashed lines show ± 25%.

A5.12 The predicted road-NOx concentrations at each receptor location have been adjusted using the adjustment factor set out above, which, along with the background NO_2, has been processed through the NOx to NO_2 calculator available on the Defra LAQM Support website (Defra, 2025b). The traffic mix within the calculator has been set to "All London traffic", which is considered suitable for the study area. The calculator predicts the component of NO_2 based on the adjusted road-NOx and the background NO_2.

PM_{10} and $PM_{2.5}$

A5.13 The approach described above for NOx and NO_2 determines the road increment of concentrations by subtracting the predicted local background from the roadside measurements. This works well for NOx because the differences between roadside and background concentrations typically represent a large proportion of the total measured value. The same is not true for PM_{10} and $PM_{2.5}$ concentrations, which are dominated by non-road emissions, even at the roadside. In practice, the influence of a local road on concentrations can often be smaller than the uncertainty in the mapped background concentration. As an example of this, 31% of all roadside and kerbside sites in London which measured $PM_{2.5}$ in 2019 with >75% data capture, recorded an annual mean concentration lower than the equivalent Defra mapped background value. Using measured background concentrations does not provide any significant benefit, owing largely to the spatial resolution of available measurements, but also because of measurement uncertainty. For example, hourly-mean $PM_{2.5}$ concentrations measured at roadside sites are often lower than those measured at nearby urban background sites, while concentrations at urban background sites are often lower than those measured at rural sites.

A5.14 For these reasons, it is not appropriate to calculate the annual mean road-increment to PM_{10} and $PM_{2.5}$ concentrations by subtracting either the mapped background or a local measured background concentration. This, in turn, means that the approach to model adjustment which is

described for NOx and NO_2 is not appropriate for PM_{10} and $PM_{2.5}$. Historically, many studies have derived a model adjustment factor for NOx and applied this to PM_{10} and $PM_{2.5}$. This is also not appropriate, since there is no reason to expect the same bias in emissions of NOx, PM_{10} and $PM_{2.5}$.

A5.15 While there is very strong evidence that EFT-based models have consistently under-predicted road-NOx concentrations in urban areas, there is no equivalent evidence for PM_{10} and $PM_{2.5}$. There is currently no strong basis for applying any adjustment to the model outputs. Predicted concentrations of PM_{10} and $PM_{2.5}$ have thus not been adjusted.

A6 'Air Quality Neutral'

A6.1 The GLA's London Plan Guidance; Air Quality Neutral (GLA, 2023a) provides an approach to assessing whether a development is air quality neutral. The approach is to compare the expected emissions from the building's energy use and vehicle trips against defined benchmarks for buildings and transport in London.

A6.2 The benchmarks for heating and energy plant (termed 'Building Emissions Benchmarks' or 'BEBs') are set out in Table A6-1, while the 'Transport Emissions Benchmarks' ('TEBs') are set out in Table A6-2.

A6.3 The average trip length and average emission per vehicle are required if there is a need to calculate offset payments. The values given by GLA are set out in Table A6-3 and Table A6-4 respectively.

Table A6-1: Building Emissions Benchmark NOx Emission Rates (gNOx/m²/annum) [a]

Land Use [b]	Individual Gas Boilers	Gas Boiler Network	CHP + Gas Boiler Network	Heat Pumps + Gas Boiler Network
Residential (including student accommodation and large-scale purpose-built shared living development)	3.5	5.7	7.8	5.7
Retail	0.53	0.97	4.31	0.97
Restaurants and bars	1.76	3.23	14.34	3.23
Offices	1.43	2.62	11.68	2.62
Industrial	1.07	1.95	8.73	1.95
Storage and distribution	0.55	1.01	4.5	1.01
Hotel	9.47	15.42	38.16	15.42
Care homes and hospitals	9.15	14.90	36.86	14.90
Schools, nurseries, doctors' surgeries, other non-residential institutions	0.90	1.66	7.39	1.66
Assembly and leisure	2.62	4.84	21.53	4.84

[a] Solid and liquid biomass appliances also emit fine particulate matter in addition to NOx. The benchmark emission rate for particulate matter is zero.

[b] Separate use classes for commercial uses, including retail and offices, have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the intended use is not specified, or where use class E has been specified, the benchmark for retail should be used.

Table A6-2: Benchmark Trip Rates

Land Use	Annual trips per	Benchmark Trip Rates		
		Central Activities Zone (CAZ)	Inner London (excluding CAZ)	Outer London
Residential (including student accommodation and large-scale purpose-built shared living development)	dwelling	68	114	447
Office / Light Industrial	m^2 (GIA)	2	1	16
Retail (Superstore)	m^2 (GIA)	39	73	216
Retail (Convenience)	m^2 (GIA)	18	139	274
Restaurant / Café	m^2 (GIA)	64	137	170
Drinking establishments	m^2 (GIA)	0.8	8	N/A
Hot food takeaway	m^2 (GIA)	N/A	32.4	590
Industrial	m^2 (GIA)	N/A	5.6	6.5
Storage and distribution	m^2 (GIA)	N/A	5.5	6.5
Hotels	m^2 (GIA)	1	1.4	6.9
Care homes and hospitals	m^2 (GIA)	N/A	1.1	19.5
Schools, nurseries, doctors' surgeries, other non-residential institutions	m^2 (GIA)	0.1	30.3	44.4
Assembly and leisure	m^2 (GIA)	3.6	10.5	47.2

Table A6-3: Emission factors per vehicle-km

Pollutant	Emission factors (g/veh-km)		
	Central Activities Zone (CAZ)	Inner London [a] (excluding CAZ)	Outer London [a]
NOx	0.48	0.39	0.35
$PM_{2.5}$	0.036	0.032	0.028

[a] Inner London and Outer London as defined in the London Plan (GLA, 2021).

Table A6-4: Average Distance Travelled by Car per Trip

Land use	Distance (km)		
	Central Activity Zone	Inner	Outer
Residential	4.2	3.4	11.4
Office	3.0	7.2	10.8

Land use	Distance (km)		
	Central Activity Zone	Inner	Outer
Retail	9.2	5.5	5.4

A7 Construction Mitigation

A7.1 Table A7-1 presents a set of best-practice measures from the GLA guidance (GLA, 2014) that should be incorporated into the specification for the works. These measures should be written into a Dust Management Plan. Some of the measures may only be necessary during specific phases of work, or during activities with a high potential to produce dust, and the list should be refined and expanded upon in liaison with the construction contractor when producing the Dust Management Plan.

Table A7-1: Best-Practice Mitigation Measures Recommended for the Works

Measure	Desirable	Highly Recommended
Site Management		
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site		✓
Develop a Dust Management Plan (DMP)		✓
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 are being carried out and during prolonged dry or windy conditions		✓
Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and ensure that the action taken to resolve the situation is recorded in the log book		✓
Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes		✓
Preparing and Maintaining the Site		

Measure	Desirable	Highly Recommended
Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible		✓
Erect solid screens or barriers around dusty 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		✓
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution	✓	
Avoid site runoff of water or mud		✓
Keep site fencing, barriers and scaffolding clean using wet methods		✓
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		✓
Cover, seed, or fence stockpiles to prevent wind whipping		✓
Carry out regular dust soiling checks of buildings within 100 m of site boundary and provide cleaning if necessary		✓
Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust	✓	
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly		✓
Agree monitoring locations with the Local Authority		✓
Where possible, commence baseline monitoring at least three months before work begins		✓
Operating Vehicle/Machinery and Sustainable Travel		
Ensure all on-road vehicles comply with the requirements of the London LEZ (and ULEZ)		✓
Ensure all Non-road Mobile Machinery (NRMM) comply with London's NRMM emission standards. NRMM used on any site within Greater London is required to meet Stage IV of EU Directive 97/68/EC (The European Parliament and the Council of the European Union, 1997) and its subsequent amendments as a minimum. From January 2030 the stage V standard will apply, and from January 2040 only zero emission machinery will be allowed.		✓
Ensure all vehicles switch off engines when stationary – no idling vehicles		✓
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable		✓

Measure	Desirable	Highly Recommended
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-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)		✓
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials		✓
Implement a Travel Plan that supports and encourages sustainable staff travel (public transport, cycling, walking, and car-sharing)		✓
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 suppression/mitigation, using non-potable water where possible and appropriate		✓
Use enclosed chutes, conveyors and covered skips		✓
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate		✓
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		
Reuse and recycle waste to reduce dust from waste materials		✓
Avoid bonfires and burning of waste materials		✓
Measures Specific to Demolition		
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust)		✓
Ensure water suppression is used during demolition operations.		✓
Avoid explosive blasting, using appropriate manual or mechanical alternatives		✓
Bag and remove any biological debris or damp down such material before demolition		✓
Measures Specific to Earthworks		

Measure	Desirable	Highly Recommended
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable	✓	
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	✓	
Only remove the cover from small areas during work, not all at once	✓	
Measures Specific to Construction		
Avoid scabbling (roughening of concrete surfaces), if possible	✓	
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		✓
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	✓	
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust	✓	
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		✓
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable)		✓
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits		✓
Access gates should be located at least 10 m from receptors, where possible		✓
Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site		✓

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