Air Quality Assessment:
St Clare Business Park Site, Hampton Hill

April 2023

Experts in air quality management & assessment

Document Control

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Executive Summary

The air quality effects of the proposed development of St. Clare Business Park, Hampton Hill, have been assessed. The proposals involve the demolition of the existing buildings occupying the site and the subsequent construction of 100 residential properties with associated car parking, and total provision of 1,885 m^2 commercial space.

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.

The net change in vehicle trips on the local road network as a result of the proposed development is well below established screening criteria for identifying significant air quality effects at existing sensitive roadside receptors; thus any associated impacts will be negligible.

The proposed development will be provided with heat and hot water via all-electric Air Source Heat Pump systems and arrays of photovoltaic panels mounted at roof level. There will be no combustion plant and thus no point sources of emissions within the proposed development.

The suitability of the site for its proposed use has also been considered. Pollutant concentrations will be well below the relevant air quality objectives and air quality for future residents and users will therefore be acceptable.

The overall 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 requirements that new developments are at least 'air quality neutral'.

Contents

1 Introduction

1.1 This report describes the potential air quality impacts associated with the proposed residential-led, mixed-use development at the St Clare Business Park site, Hampton Hill. The assessment has been carried out by Air Quality Consultants Ltd (AQC) on behalf of Notting Hill Home Ownership Ltd. The proposed development is described as follows:

"Demolition of existing buildings and erection of 1 no. mixed use building between three and five storeys plus basement in height, comprising 86 no. residential flats (Class C3) and 1,290 sq.m of commercial floorspace (Class E); 1 no. two storey building comprising 595sq.m of commercial floorspace (Class E); 14no. residential houses (Class C3); and, associated access, external landscaping and car parking."

1.2 A planning application was submitted for an alternative development at the site in June 2022 (planning application reference: 22/2204/FUL)[1]. Following submission, the London Borough of Richmond upon Thames (LBRuT) has provided consultation comments on the development (dated 9th March 2023). Since then, and taking account of the consultation comments, the description of the proposals has been amended and updates to technical assessments are required, including the air quality assessment.

1.3 The proposed development lies within a borough-wide Air Quality Management Area (AQMA) declared by the London Borough of Richmond upon Thames (LBRuT) for exceedances of the annual mean nitrogen dioxide (NO_2) objective, and the annual mean and 24-hour mean PM_{10} objectives. It 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 and users will experience. The proposed development will also lead to changes in vehicle flows on local roads, which may impact upon 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 proposed development will be provided with heat and hot water via all-electric Air Source Heat Pump (ASHP) systems and arrays of photovoltaic (PV) panels mounted at roof level. There will be no combustion plant and thus no point sources of emissions within the proposed development.

1.5 The location and setting of the proposed development is shown in Figure 1.

[1] The previous description of the development was *"demolition of existing buildings and erection of 1no. mixed use building between three and five storeys plus basement in height, comprising 98no. residential flats (Class C3) and 1,172 m^2 of commercial floorspace (Class E); 1no. three storey building comprising 893 m^2 of commercial floorspace (Class E); 14no. residential houses (Class C3); and, associated access, external landscaping and car parking."*

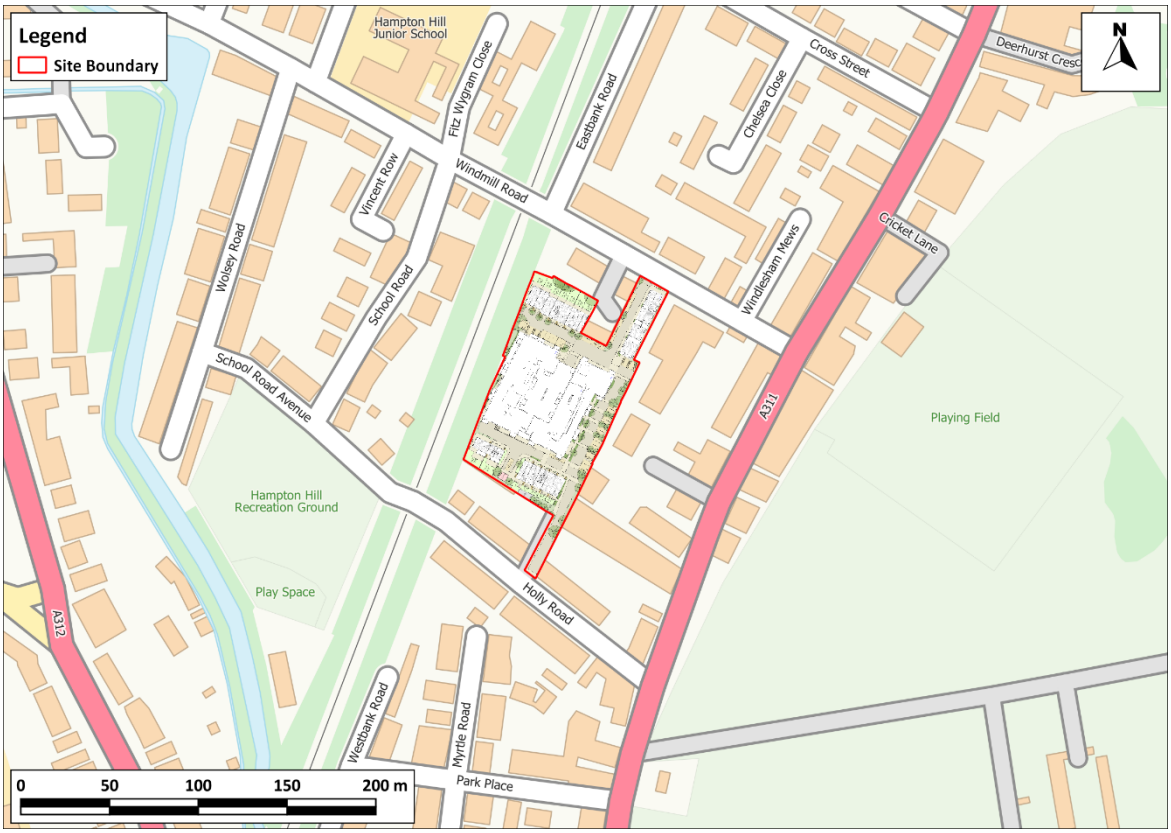

Figure 1: Location and Setting of the Proposed Development

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1.6 The Greater London Authority's (GLA's) London Plan (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, 2023).

1.7 The GLA has also released Supplementary Planning Guidance (SPG) on the Control of Dust and Emissions from Construction and Demolition (GLA, 2014b). 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 2019; 2020 and 2021 data were not used due to the impact of the Covid-19 pandemic on measured pollutant concentrations) and considers the air quality conditions at the proposed development in 2026, which is the anticipated year of first occupation. The assessment of the impacts from development-generated road traffic emissions also focuses on the future year of 2026. 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 and Assessment Criteria

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

Air Quality Strategy

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.

Clean Air Strategy 2019

2.3 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

2.4 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.

2.5 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 has since announced that the phase-out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe

from 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades.

Environment Act 2021

2.6 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.

2.7 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 3.5.

Environmental Improvement Plan 2023

2.8 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018b). The Environment Act (2021) requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2023 (Defra, 2023a) 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.

2.9 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 3.5, include the long-term targets in the Statutory Instrument and interim targets to be achieved by 2028.

2.10 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It notes that an Air Quality Strategy will be published to provide guidance on how local authorities should assist. The Plan makes clear that this will focus on reducing emissions from sources within a local authority's control, including through traffic management and planning powers. This focus on emissions, as opposed to directly requiring local authorities to assess $PM_{2.5}$ concentrations against the new targets, recognises that $PM_{2.5}$ is a cross-boundary issue; most $PM_{2.5}$ within a local authority's area is not, by and large, emitted within that local authority. The 2023 Plan 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

2.11 The National Planning Policy Framework (NPPF) (2021) 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".

2.12 To prevent unacceptable risks from air pollution, Paragraph 174 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 quality".

2.13 Paragraph 185 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".

2.14 More specifically on air quality, Paragraph 186 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".

2.15 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".

2.16 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".

2.17 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"*.

2.18 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".

2.19 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".

2.20 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

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

The London Plan

2.22 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".

2.23 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".

2.24 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."

2.25 The proposed development is not large-scale development, thus an Air Quality Positive statement is not required.

2.26 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".

2.27 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".

2.28 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 Nitrogen Dioxide 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"[2].

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

London Environment Strategy

2.30 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

[2] The London Plan was developed based on a WHO guideline for $PM_{2.5}$ of 10 µg/m^3 (see Paragraph 2.30).

strategy has also been published which sets out what the Mayor will do between 2018 and 2023 to help achieve the ambitions in the strategy.

Mayor's Transport Strategy

2.31 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: Sustainable Design and Construction

2.32 The GLA's SPG on Sustainable Design and Construction (GLA, 2014a) was revoked upon publication of the new London Plan, but it is understood that GLA still expects the emission standards set within it for gas-fired boilers, Combined Heat and Power (CHP) and biomass plant to be met.

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 (2014b) 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's (IAQM's)[3] guidance (2016), and it states that "*the latest version of the IAQM Guidance should be used*".

Air Quality Focus Areas

2.34 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 not located within an air quality Focus Area.

Local Transport Plan

2.35 The LBRuT Third Local Implementation Plan (LIP3) sets out a programme of measures and schemes to implement the Mayor's Transport Strategy within the Borough (LBRuT, 2019a). It aims to achieve

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

nine outcomes through the adoption of 14 over-arching objectives, with 57 objectives linked to specific outcomes. These include to:

"Reduce the environmental impacts and pollution levels due to transport, and encourage improvements in air quality, particularly near schools, town centres, along major roads and areas that already exceed acceptable air quality standards."

2.36 Three LIP3 projects and programmes link to the Mayor's Transport Strategy outcomes. These are:

- *"Electric vehicle charge points*
- *Air quality infrastructure and monitoring (air quality monitoring, green walls, air filters, etc)*
- *Air quality revenue (campaigns, awareness, behaviour change, focused on schools and town centres)"*

Local Policies

Local Plan

2.37 The LBRuT Local Plan was adopted in July 2018 (LBRuT, 2018). One of the strategic objectives within this Plan is to:

"Reduce or mitigate environmental impacts and pollution levels (such as air, noise, light, odour, fumes, water and soil) and encourage improvements in air quality, particularly along major roads and areas that already exceed acceptable air quality standards."

2.38 More specifically, Policy LP 10 concerns local environmental impacts, pollution and land contamination. In terms of air quality, Policy LP 10 states:

"The Council promotes good air quality design and new technologies. Developers should secure at least 'Emissions Neutral' development. To consider the impact of introducing new developments in areas already subject to poor air quality, the following will be required:

1. *An air quality impact assessment, including where necessary, modelled data;*
2. *Mitigation measures to reduce the development's impact upon air quality, including the type of equipment installed, thermal insulation and ducting abatement technology;*
3. *Measures to protect the occupiers of new developments from existing sources;*
4. *Strict mitigation for developments to be used by sensitive receptors such as schools, hospitals and care homes in areas of existing poor air quality; this also applies to proposals close to developments used by sensitive receptors."*

Air Quality Supplementary Planning Document (SPD)

2.39 The LBRuT Air Quality Supplementary Planning Document (SPD) was adopted in June 2022 and aims to provide a consistent approach to new development (LBRuT, 2020a). It provides advice on:

- *"the implementation of Policy LP 10, Part B. Air Quality* [of the LBRuT Local Plan];
- *designing new developments to minimise the effects on the local community as well as avoiding introducing new exposure in areas of poor air quality;*
- *the assessment of air quality impacts of development; and*
- *appropriate mitigation measures."*

2.40 The SPD has been utilised in this assessment.

Sustainable Construction Checklist Guidance Document SPD

2.41 The LBRuT Sustainable Construction Checklist Guidance Document SPD (LBRuT, 2020b) was adopted in June 2020, and forms a mandatory part of the planning application for residential developments providing one or more new dwellings, or 100 m^2 or more floor space for non-residential developments. It provides a list of relevant policies relating to energy use and pollution, including pollution during the construction process, and incorporates policies outlined in the adopted Local Plan.

2.42 Section 2 of the SPD states the following in relation to electric vehicle charging points:

"The London Plan requires 20% of parking space to have active provision for electric vehicle charging and 80% passive provision. The Council's ambition is that charging facilities are provided in such a way as to enable direct access to charging facilities for all vehicles. Consequently, the Council supports development making provision for 100% active electric vehicle parking. This does however not mean that every parking space where parking is shared communally needs to be equipped with a charging point, as one fast or rapid charging point may cater for many vehicles. Applicants will need to demonstrate that their development would be able to operate satisfactorily in the future expectation of all vehicles being electrically powered."

2.43 The SPD states the following in relation to energy provision and usage:

"An Energy Statement: This is an assessment of expected energy demand at the site, showing how energy and carbon dioxide emissions will be reduced through the implementation of the Intend to Publish London Plan (2019) energy hierarchy; consisting of energy efficient design measures ('Be Lean'), decentralised heating ('Be Clean') and renewable energy technologies ('Be Green') designing for minimum energy use and installing on-site renewable energy in line with LBRuT and the GLA Energy Assessment Guidance requirements. Further guidance regarding producing an Energy Statement can be found in section 7 of this document."

Construction Code of Practice

2.44 The LBRuT Construction Code of Practice was adopted in January 2022 and details measures that should be employed by construction sites in order to minimise environmental disturbance to sensitive receptors such as local residents, schools, hospitals and businesses (LBRuT, 2022a).

2.45 The measures detailed in the document are based upon those outlined in the GLA's guidance on the *Control of Dust and Emissions during Construction and Demolition SPG* (2014a).

Building Standards

2.46 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[4], to ensure adequate ventilation is provided to building occupants.

2.47 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 3.9, 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.

2.48 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.

2.49 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 building.

Air Quality Action Plans

National Air Quality Plan

2.50 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, 2018a) 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

[4] 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.

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 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 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

2.51 The LBRuT declared a borough-wide AQMA in 2000 for exceedances of the annual mean NO_2 objective and the annual mean and 24-hour mean PM_{10} objectives. The LBRuT's most recent Air Quality Action Plan was published in 2019 for the period up to 2024 (LBRuT, 2019b). The Plan focuses on the following five priorities:

- *"Monitoring of air quality"*
- *"Changing our environment"* – to encourage sustainable and active transport and promote electric vehicle uptake
- *"Changing behaviour"* – including campaigns and initiatives and improving communication
- *"Tackling pollution"* – such as anti-idling initiatives, dealing with bonfires and regulating demolition and construction activities.
- *"Protecting our schools".*

3 Assessment Criteria

3.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. 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 NO_2 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 mean NO_2 concentrations will only be considered if the annual mean concentration is above this level.

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 3.9), originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

3.5 Defra has also recently 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, with the interim target being a value of 12 µg/m^3 by the start of 2028[5]. The second set of targets relate to reducing overall population

[5] 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.

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, with the interim target being a reduction of 22% by the start of 2028.

3.6 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). Furthermore, as explained in Paragraph 2.10, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an important role delivering the required improvements, the actions required of local authorities, which will be clarified within a future Air Quality Strategy, relate to controlling emissions and not to directly assessing $PM_{2.5}$ concentrations against the targets.

3.7 Development control decisions can most effectively support Defra to achieve all four targets by optimising new developments to reduce their total emissions. The ambient concentrations to which occupants of new developments are exposed will have no effect on the ability to meet these targets. Similarly, where a new development causes an increase in local concentrations, this must be viewed in the context that all four targets relate to concentrations across England as a whole; there will be very few locations where a localised impact could alter the date by which the target is achieved in England.

3.8 As explained in Paragraph 2.30, 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.

3.9 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)[6]. The limit values for NO_2 and PM_{10} are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

3.10 The relevant air quality criteria for this assessment are provided in Table 1.

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

Table 1: Air Quality Criteria for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Value
NO_2	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3 [a]
$PM_{2.5}$	Annual Mean	20 µg/m^3 [b]
		10 µg/m^3 by 2030

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

Construction Dust Criteria

3.11 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM (2016) has been used (the GLA's SPG (2014b) recommends that the assessment be based on the latest version of the IAQM guidance). Full details of this approach are provided in Appendix A2.

Screening Criteria for Road Traffic Assessments

3.12 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 m^2 of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

3.13 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; outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that *"the criteria provided are precautionary and should be treated as indicative"*, and *"it may be appropriate to amend them on the basis of professional judgement"*.

4 Assessment Approach

Consultation

4.1 As previously discussed, following submission of a planning application for a previous scheme at the site the LBRuT has provided consultation comments (dated 9th March 2023) with regards to air quality, which broadly include the following:

- *"TEB calculations are incomplete - they give neither NOx nor PM_{10} emission values;*
- *new occupants should not be negatively impacted. However existing residents may be, especially those in flats above shops in Hampton Hill High Street. This development is within LBRUT's AQMA; traffic from this development is likely to impact existing residents. An additional 98 flats, 14 houses, commercial and mixed use development will introduce more emissions, through daily trips, deliveries and servicing. All development traffic must enter/exit either onto the nearby Hampton Hill High St or Uxbridge Rd via Windmill or Holly Rd. Both roads are narrow; Hampton Hill High St is busy with queuing traffic for many hours of the day, all week, including weekends. Any traffic added to queuing vehicles is of concern, since idling creates higher levels of pollutant than free flowing; and*
- *the proposal must comply with*
    - *cycle parking, (including for larger cycles) - London Plan 2021*
    - *EVCP – min 20% active/80% passive - London Plan 2021*
    - *car club bays - LBRUT's AQ SPD, 2020, S92 - car club bays must be accompanied with at least 2 years membership to car club company to ensure viability for car club and encourage shift away from private car ownership for occupiers."*

4.2 The assessment has addressed these consultation comments and has considered the updated proposed development description. Furthermore, an updated Air Quality Neutral assessment has been undertaken in line with the latest GLA London Plan – Air Quality Neutral guidance (GLA, 2023). Additionally, the development-generated traffic flows have been compared to screening criteria published in EPUK/IAQM guidance, following an industry standard approach, and mitigation consistent with the London Plan and local policies will be provided.

Existing Conditions

4.3 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, 2023e);

- local sources have been identified through examination of the LBRuT'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 LBRuT. This covers both the study area and nearby sites, the latter being used to provide context for the assessment;
- the pollutant concentration maps presented in the London Atmospheric Emissions Inventory (LAEI) database (GLA, 2022) have also been utilised. These maps show the modelled 2019 ground level concentrations of annual mean NOx, NO_2, PM_{10} and $PM_{2.5}$ in $\mu g/m^3$ at 20 m grid resolution across the whole of Greater London. For PM_{10}, the dataset also includes the number of daily means exceeding 50 $\mu g/m^3$;
- background concentrations have been defined using Defra's 2018-based background maps (Defra, 2023b). These cover the whole of the UK on a 1x1 km grid. The background annual mean NO_2 maps for 2019 have been calibrated against concurrent measurements from national monitoring sites (AQC, 2020). The calibration factor calculated has also been applied to future year backgrounds. 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 in the study area has been identified using the maps of roadside concentrations published by Defra (2020) (2023d). These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to identify and report exceedances of the limit value. The national maps of roadside PM_{10} and $PM_{2.5}$ concentrations (Defra, 2023d), which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.

Construction Impacts

4.4 The construction dust assessment considers the potential for impacts within 350 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, 2014b), which is based on that provided by IAQM (2016). 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.

Operational Impacts

Road Traffic Screening

4.5 The proposed development traffic generation has been screened 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.

Impact of Existing Sources on Future Residents and Users of the Development

4.6 The impacts of concentrations of NO_2, PM_{10} and $PM_{2.5}$ on new residents and users of the proposed development have been assessed qualitatively. The assessment considers air quality conditions within the site, taking account of local air quality monitoring data available from the LBRuT, the LAEI pollutant concentration maps, background pollutant concentrations and proximity to local road traffic.

Assessment of Significance

Construction Dust Significance

4.7 Guidance from IAQM (2016) 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, 2014b) 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'.

Operational Significance

4.8 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 the IAQM (Moorcroft and Barrowcliffe et al, 2017) has therefore been used. The overall significance of the air quality impacts is determined using professional judgement; 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'

4.9 The GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023) 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.

4.10 Appendix A5 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

5.1 The proposed development site is located in Hampton Hill, approximately 1.5 km northeast of Hampton railway station, and is bounded by Windmill Road to the north, Holly Road to the south, the electrified Shepperton branch railway line to the west, and existing residential properties to the east.

5.2 The site is currently occupied by low density light industrial units. The surrounding area is broadly residential and suburban in nature; the A311 High Street is located approximately 100 m to the east, characterised by a mix of local commercial premises and residential properties, and associated traffic. Bushy Park is located to the east of High Street.

Air Quality Management Areas

5.3 The LBRuT has investigated air quality within its area as part of its responsibilities under the LAQM regime. A Borough-wide AQMA was declared in December 2000 for exceedances of the annual mean NO_2 objective, and the annual mean and 24-hour mean PM_{10} objectives (LBRuT, 2022b).

Industrial Sources

5.4 A search of the UK Pollutant Release and Transfer Register (Defra, 2023e) has not identified any significant industrial or waste management sources that are likely to affect the proposed development, in terms of air quality.

Local Air Quality Monitoring

5.5 The LBRuT operates three automatic monitoring stations within its area, none of which are close to the proposed development. The Teddington AURN monitor 'TD0' was located approximately 1.4 km to the east of the proposed development; however, this site closed in 2017. The LBRuT also operates a number of NO_2 monitoring sites using diffusion tubes prepared and analysed by Gradko (using the 50% TEA in acetone method), including five sites to the north of the proposed development along the A312 Uxbridge Road, A313 Park Road/Hampton Road/Broad Street and A311 High Street. Results from these diffusion tube monitoring sites for the years 2015 to 2021 are summarised in Table 2 and their locations are shown in Figure 2.

5.6 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 considerable impact of the Covid-19 pandemic on traffic volumes and thus measured pollutant concentrations.

Table 2: Summary of Annual Mean NO_2 Monitoring (2015-2021) (µg/m³) [a, b]

Site ID	Site Type	Location	2015	2016	2017	2018	2019	2020	2021
4	Kerbside	Hampton Road, Hampton Hill (nr. Laurel Dene)	36	**40**	36	35	31	27	28
7	Kerbside	Broad Street, Teddington (Boots)	**47**	**49**	**43**	**45**	39	34	37
64	Kerbside	High Street, Hampton Hill	**55**	**53**	**49**	**45**	**41**	34	35
69	Roadside	Uxbridge Rd nr. Longford Close, TW12	-	-	-	38	31	22	23
75	Kerbside	Hampton Road (opp. Teddington Memorial Hospital)	-	-	-	-	-	29	29
Objective			**40**						

[a] Exceedances of the objective are shown in bold.

[b] Data taken from the LBRuT Annual Status Report for 2021 (LBRuT, 2022b).

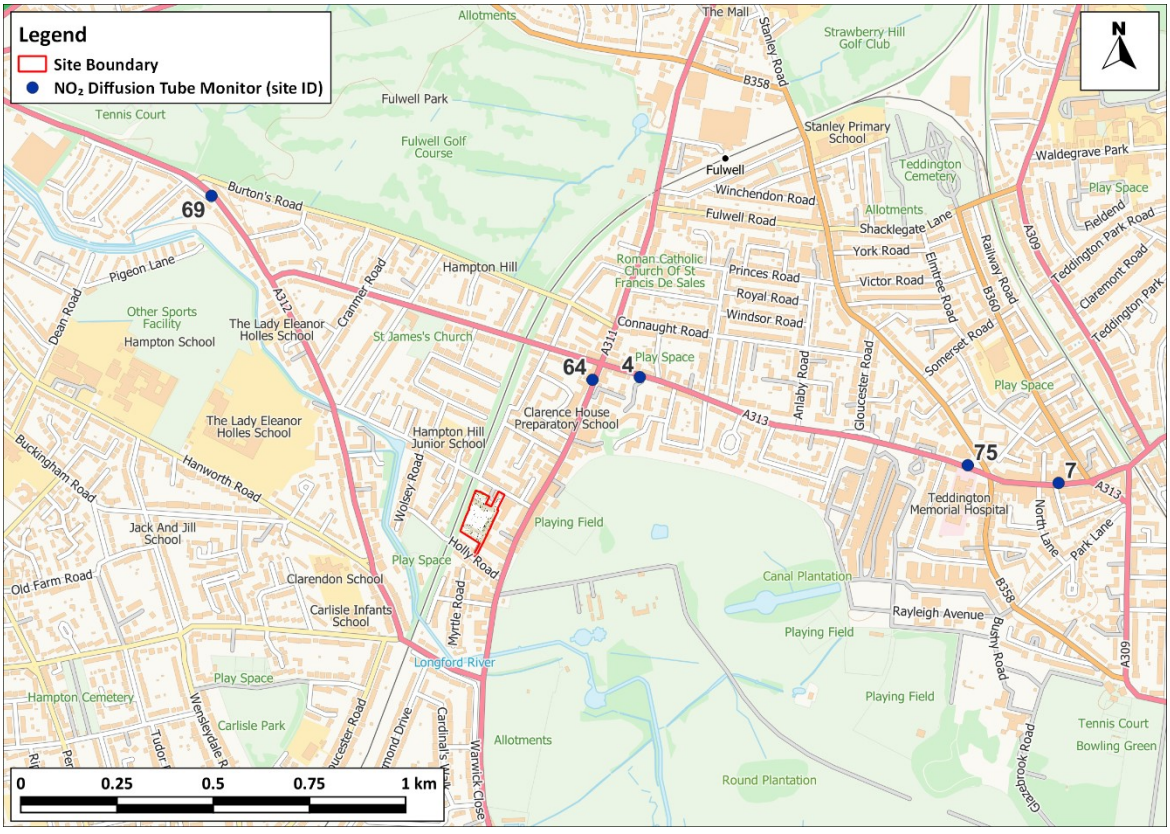

Figure 2: Monitoring Locations

5.7 The results presented in Table 2 show that, broadly, there has been a reduction in annual mean NO_2 concentrations between 2015 and 2019 (for where data are available). Notwithstanding this, the annual mean objective was exceeded at kerbside monitoring site '64' in 2019; elsewhere, concentrations were below the objective. It is anticipated that concentrations at the proposed development will be lower than those at the roadside and kerbside sites presented in Table 2 due to the distance of the development façade from major busy roads compared to the monitoring locations, and no other major nearby sources of pollution.

5.8 In regard to 1-hour mean NO_2 concentrations, the LBRuT has concluded that there have been no recorded exceedances of the objective in the Borough since 2015 (LBRuT, 2022b). Furthermore, the LBRuT has also concluded that there have been no recorded exceedances of the annual mean PM_{10} and $PM_{2.5}$ objectives in the Borough since 2015, alongside no recorded exceedances of the 24-hour mean PM_{10} objective.

Exceedances of EU 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, 2023c). Furthermore, Defra's roadside annual mean NO_2 concentrations (Defra, 2023d), 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, but not for the roads close to 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 2026 (the anticipated year of first occupation of the proposed development) (Defra, 2020) also do not identify any exceedances within 1 km of the proposed development. 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 at the proposed development for the years 2019 (to align with the most recent calendar year of suitable monitoring data available from the LBRuT that is unaffected by the Covid-19 pandemic) and 2026 (the anticipated year of first occupation) are set out in Table 3.

5.12 The background concentrations are all well below the respective objectives.

Table 3: Estimated Annual Mean Background Pollutant Concentrations in 2019 and 2026 (µg/m^3)

Year	NO_2	PM_{10}	$PM_{2.5}$
2019	19.1	15.6	10.8
2026	15.0	14.4	9.8
Objective / GLA target	**40**	**40**	**20 / 10** [a]

[a] The 20 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m^3 is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

6 Construction Phase Impact Assessment

6.1 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

6.2 There will be a requirement to demolish the existing brick and concrete office buildings and metal frame industrial units over a period of five months, with an approximate total volume of 13,000 m^3. The maximum building height will be up to two-storeys and crushing and screening equipment will be used. Based on the example definitions set out in Table A2.1 in Appendix A2, the dust emission class for demolition is considered to be *small.*

Earthworks

6.3 The characteristics of the soil at the development site have been defined using the British Geological Survey's UK Soil Observatory website (British Geological Survey, 2023), as set out in Table 4. Overall, it is considered that, when dry, this soil has little potential to be dusty, due to the large grain size.

Table 4: Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Mixed (Arenaceous [a] – Rudaceous [b])
European Soil Bureau Description	River Terrace Sand/Gravel
Soil Group	Light
Soil Texture	Sand to Sandy Loam [c]

[a] grain size 0.06 – 2.0 mm.

[b] grain size > 2.0 mm.

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

6.4 The site covers some 8,600 m^2 and most of this will be subject to earthworks, involving removal of the foundations of the demolished buildings and breaking up of a paved area. The earthworks will last around nine months and dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials. The number of vehicle movements per day is not yet known. 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

6.5 Construction will involve a concrete frame with brick façade, and tarmac and concrete paving, with a total building volume of up to 40,000 m^3. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials, and from the cutting of concrete; there will be no concrete batching or sandblasting. The construction will take place over a 16-month 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 *medium*.

Trackout

6.6 The number of heavy vehicles accessing the site, which may track out dust and dirt, is currently unknown, but given the medium size of the site it is likely that there will be a maximum of between 10-50 outward heavy vehicle movements per day. Vehicles may travel over unpaved ground for up to 80 m. Based on the example definitions set out in Table A2.1 in Appendix A2, the dust emission class for trackout is considered to be *medium*.

6.7 Table 5 summarises the dust emission magnitude for the proposed development.

Table 5: Summary of Dust Emission Magnitude

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

Sensitivity of the Area

6.8 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.

Sensitivity of the Area to Effects from Dust Soiling

6.9 The IAQM guidance, upon which the GLA's guidance is based, explains that residential properties are 'high' sensitivity receptors to dust soiling (Table A2.2 in Appendix A2). There are approximately 10 to 15 residential properties within 20 m of the site (see Figure 3). Using the matrix set out in Table A2.3 in Appendix A2, the area surrounding the onsite works is of 'high' sensitivity to dust soiling.

Figure 3: 20 m Distance Band around Site Boundary

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6.10 Table 5 shows that the dust emission magnitude for trackout is *medium* and Table A2.3 in Appendix A2 thus explains that there is a risk of material being tracked 200 m from the site exit(s). Since it is not known which roads construction vehicles will use at this stage, it has been assumed that all realistic routes could be affected. There are over 100 residential properties within 20 m of the roads along which material could be tracked, including first floor residential dwellings on commercial roads (e.g. High Street) (see Figure 4). Utilising Table A2.3 in Appendix A2, the area is of 'high' sensitivity to dust soiling due to trackout.

Figure 4: 20 m Distance Band around Roads Used by Construction Traffic Within 200 m of the Site Exits

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Sensitivity of the Area to any Human Health Effects

6.11 Residential properties are also classified as being of 'high' sensitivity to human health effects, while places of work are classified as being of 'medium' sensitivity. The matrix in Table A2.4 in Appendix A2 requires information on the baseline annual mean PM_{10} concentration in the area. The highest roadside concentrations measured within the LBRuT in recent years are all less than 24 µg/m^3 (LBRuT, 2022b), and it is likely that baseline concentrations at residential properties affected by construction activity would be lower than this. Using the matrix in Table A2.4 in Appendix A2, the area surrounding the onsite works is of 'low' sensitivity to human health effects, while the area surrounding roads along which material may be tracked from the site is of 'medium' sensitivity.

Sensitivity of the Area to any Ecological Effects

6.12 The guidance considers Sites of Special Scientific Interest (SSSIs) with dust-sensitive features to be of 'medium' sensitivity. There are no designated ecological sites within 50 m of the site boundary; however, the 'Bushy Park and Home Park' SSSI is located within 20 m of High Street along which

material may be tracked (see Figure 5). Table A2.5 in Appendix A2 thus shows that the area is of 'medium' sensitivity to ecological effects as a result of trackout.

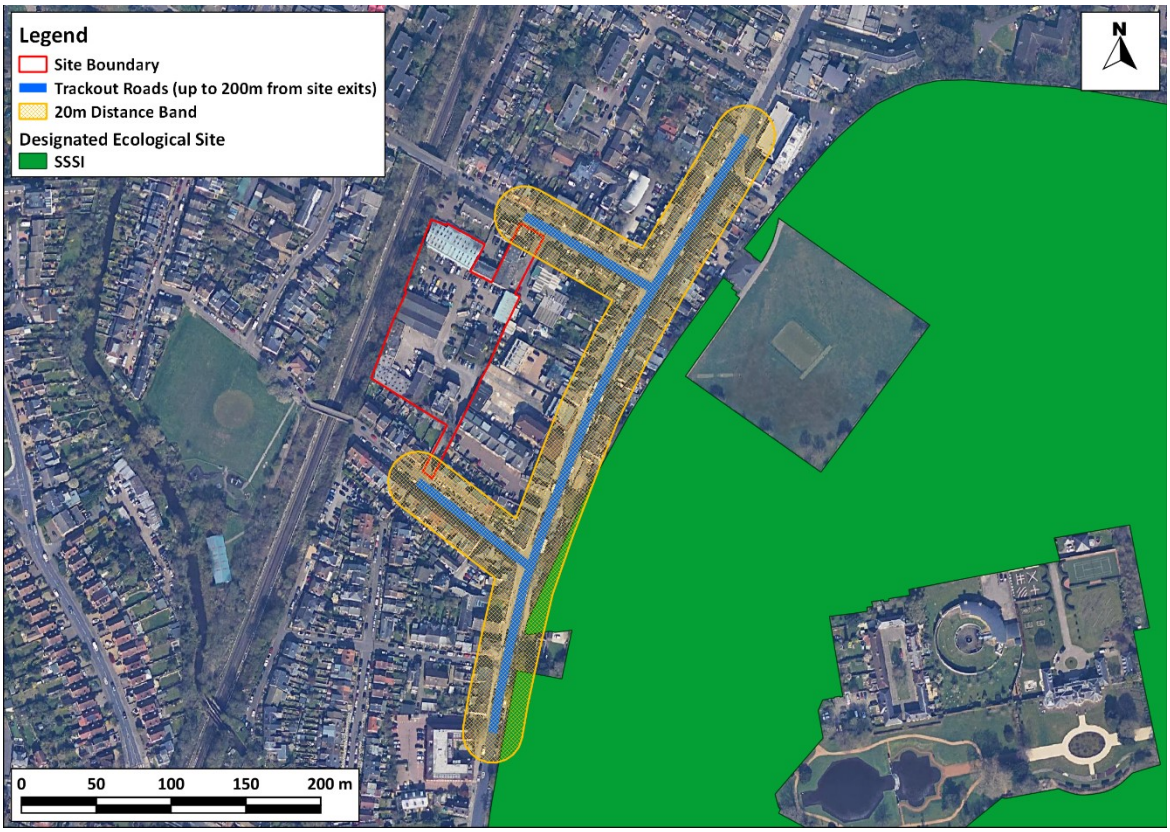

Figure 5: Location of Bushy Park and Home Park SSSI

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Summary of the Area Sensitivity

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

Table 6: Summary of the Area Sensitivity

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

Risk and Significance

6.14 The dust emission magnitudes in Table 5 have been combined with the sensitivities of the area in Table 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 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 7: Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health	Ecology
Demolition	Medium Risk	Negligible	N/A
Earthworks	Medium Risk	Low Risk	N/A
Construction	Medium Risk	Low Risk	N/A
Trackout	Medium Risk	Low Risk	Low Risk

6.15 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, 2016).

7 Operational Phase Impact Assessment

Impacts at Existing Receptors

7.1 The trip generation of the proposed development on local roads (as provided by Curtins, the project transport consultant) has initially been compared to the screening criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) (see Paragraphs A3.7 to A3.10 in Appendix A3).

7.2 Compared with the existing use of the site, the proposed development will lead to a net change in Annual Average Daily Traffic (AADT) flows of -12 vehicles on Holly Road to the south, and +66 vehicles on Windmill Road to the north.

7.3 These changes in traffic flows are well below the screening criteria of 100 AADT recommended for use within an AQMA. It should be noted that the LBRuT has raised concern regarding traffic flows along Hampton Hill Street to the east of the proposed development, and Uxbridge Road to the west. Applying the worst-case assumption that all development-generated traffic utilises both of these roads, the flows still remain below the applicable screening criteria for use within an AQMA. In reality, the development-generated road traffic will further distribute from Windmill Road along the local road network, such that traffic flows will be lower on the wider network than those along Windmill Road.

7.4 Taking account of the above, there is thus no need to progress to a more detailed assessment and it can be concluded that the proposed development will have a 'not significant' effect on local air quality with regards to development-generated road traffic emissions.

Impacts of Existing Sources on Future Residents and Users of the Development

7.5 The proposed development is located adjacent to minor roads, these being Windmill Road to the north and Holly Road to the South. The eastern boundary of the proposed development is also located greater than 70 m from the nearest major busy road, this being the A311 High Street.

7.6 The pollutant concentration maps presented in the LAEI for 2019 (GLA, 2022) show that concentrations are well below the annual mean NO_2, PM_{10} and $PM_{2.5}$ objectives at the proposed development. These concentration maps are presented in Figure 6, Figure 7 and Figure 8, and correspond to ground-floor concentrations. The maximum concentrations within the proposed development are also shown in Table 8.

Table 8: Maximum Pollutant Concentrations at the Proposed Development µg/m³) [a]

	NO_2	PM_{10}	$PM_{2.5}$
Site	25.2	15.1	10.2
Objective / GLA target	**40**	**40**	**20 / 10 [b]**

[a] Taken from the LAEI database (GLA, 2022).

[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 $PM_{2.5}$ to be achieved by 2030; again, there is no requirement for the London Boroughs to meet this.

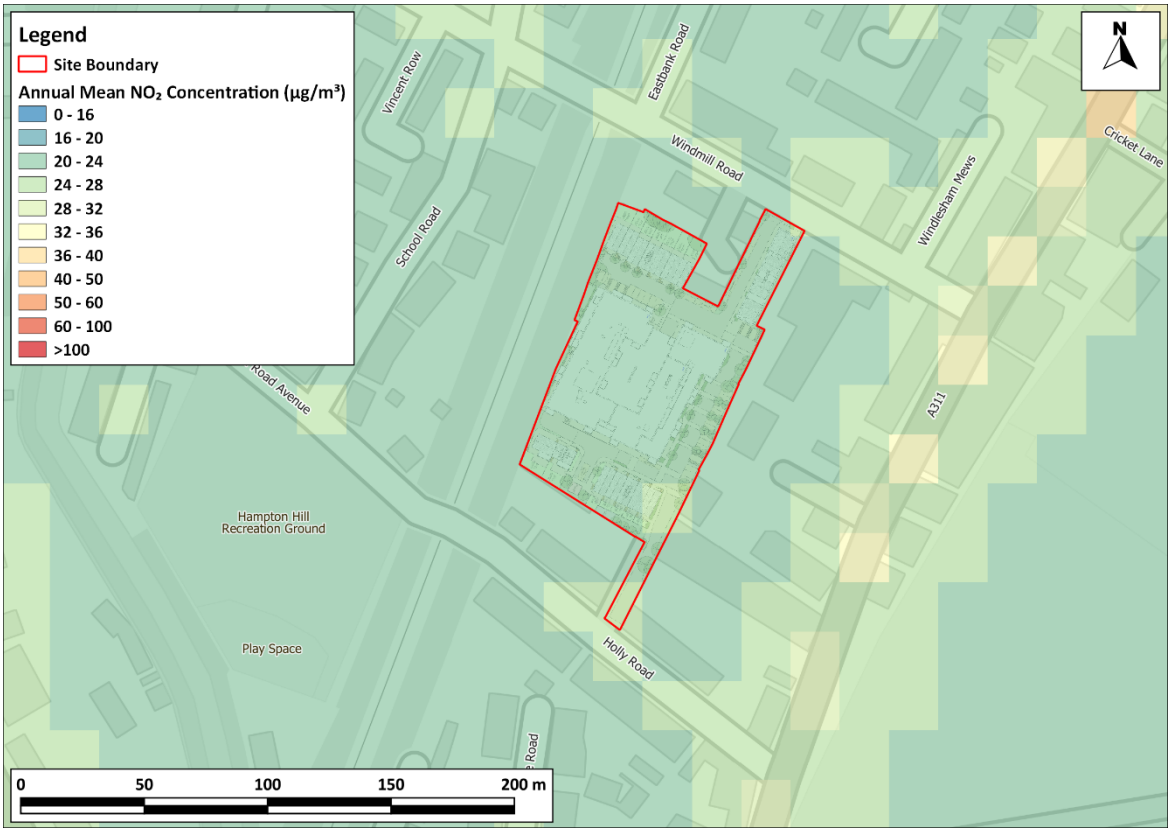

Figure 6: Ground-Floor Level Annual Mean NO_2 Concentrations (GLA, 2022)

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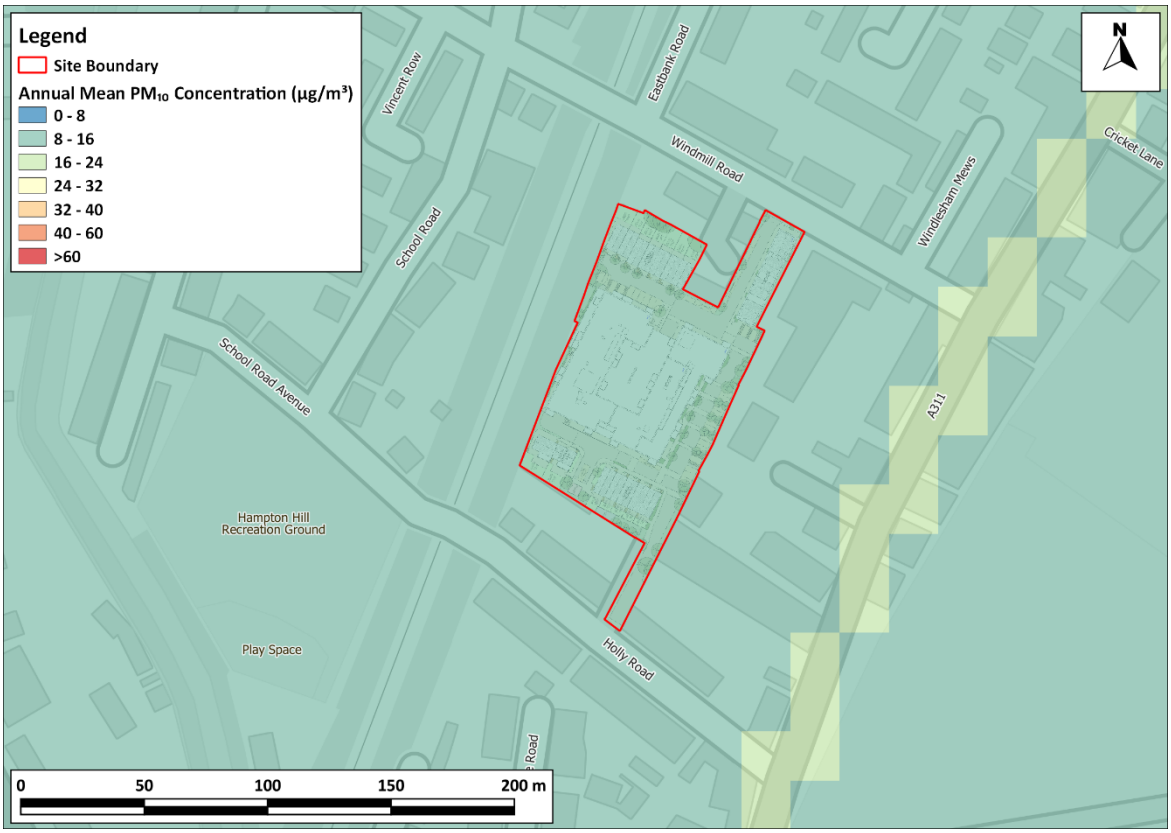

Figure 7: Ground-Floor Level Annual Mean PM_{10} Concentrations (GLA, 2022)

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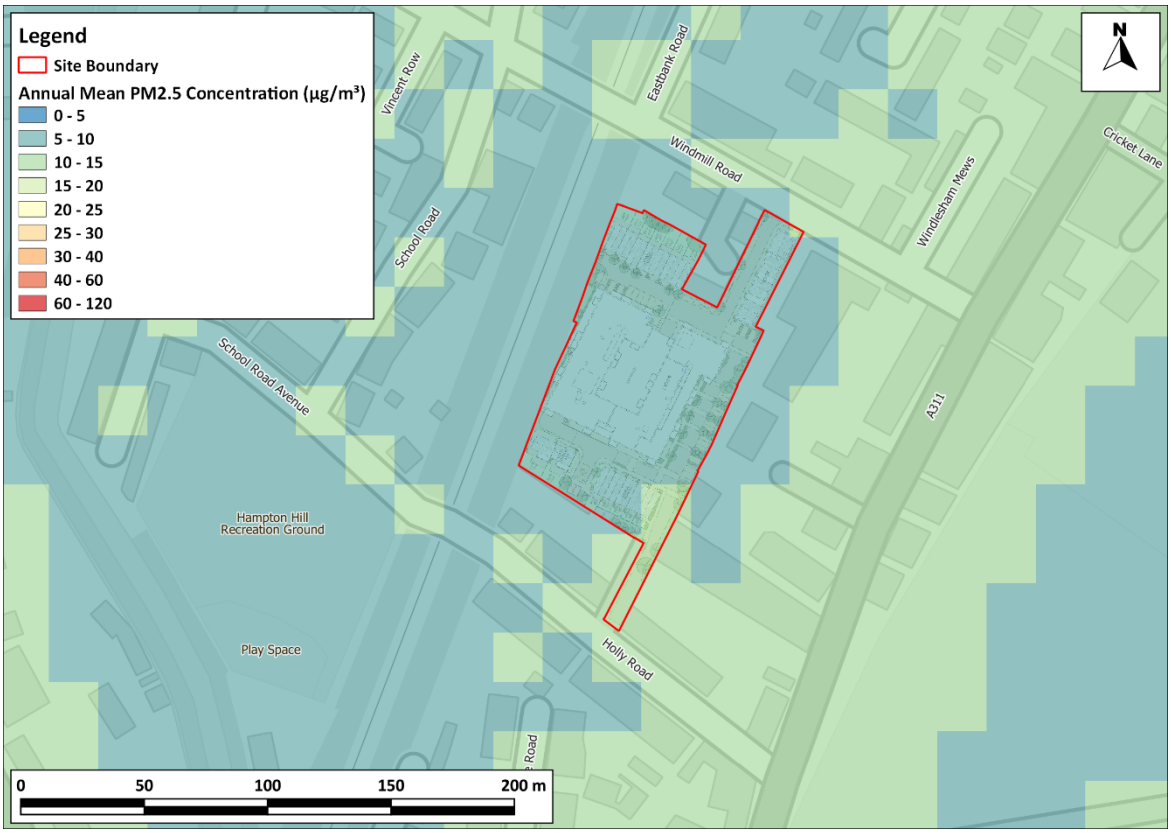

Figure 8: Ground-Floor Level Annual Mean $PM_{2.5}$ Concentrations (GLA, 2022)

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7.7 It should be noted that these concentrations are for 2019, and in reality, the proposed development will not be occupied until the future year of 2026; as such, pollutant concentrations are anticipated to be lower than those presented in Table 8, Figure 6, Figure 7 and Figure 8 as concentrations improve in future years through the introduction of more stringent emissions standards, a cleaner vehicle fleet and the implementation of the expanded ULEZ.

7.8 Taking account of the above, it is reasonable to conclude that pollutant concentrations will be below the objectives; thus future residents and users will experience acceptable air quality.

Significance of Operational Air Quality Effects

7.9 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:

- the additional traffic generated by the proposed development falls below recognised screening criteria for significant effects within an AQMA, and the impacts upon sensitive roadside receptors will be ‘not significant’; and
- pollutant concentrations within the proposed development will be well below the relevant objectives, thus future residents and users will experience acceptable air quality.

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 assessment has been undertaken using the latest GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023).

Building Emissions

8.2 The proposed development does not include any combustion plant for the routine provision of electricity, heating or hot water (as this will be provided via all-electric ASHP and PV systems) 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 Curtins (the project transport consultant) has advised that the proposed development is expected to generate a total of 43,435 car trips per year from the residential units, and a further 20,020 car trips per year from the Class E commercial floorspace (calculated based on a daily trip rate of 72 AADT on 5 days per week). These values are set out in Table 9. Appendix A5 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, alongside the development location within Greater London (i.e. Central, Inner or Outer London).

8.4 The number of dwellings within the proposed development, alongside the GIA of the Class E commercial floorspace, has been provided by AHR Architects. Table 9 shows calculation of the Benchmark Trip Rate for this development, utilising appropriate benchmark values for 'Outer' London. The guidance (GLA, 2023) states that *"where use class E has been specified without further detail, the benchmark for office/light industrial should be used as the default worst-case scenario"*.

8.5 With regards to deliveries and servicing, the GLA guidance states *"Deliveries and servicing, taxis or heavy vehicle movements from non-occupiers' assessment of these trips, for example, should be captured in the wider air quality impact assessment where one is required and should therefore be excluded from TEB calculations."* As such, delivery and servicing vehicles have been excluded from the calculations.

Table 9: Calculation of Road Transport Benchmarks and Emissions for the Proposed Development [a]

Use Class	GIA (m^2) / dwellings [b]	Benchmark		Annual Trips from Development
		trips/m^2/yr [b]	Trips/yr	
Residential [b]	100	447	44,700	43,435
Class E Commercial [c]	1,885	16	30,160	20,020
Total Trip Rate			**74,860**	**63,455**

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

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

[c] Utilising the benchmark for 'office/light industrial' in accordance with the guidance (GLA, 2023).

8.6 The total annual development-generated car trips (63,455) is less than the calculated trip rate benchmark (74,860 car trips per year). The proposed development is thus air quality neutral in terms of transport emissions. The London Plan and associated guidance does not require calculation of total transport emissions trips fall below the benchmark trip rate.

Summary

8.7 The proposed development will not have any associated building emissions as it will utilise an all-electric energy strategy for the provision of heat and hot water. The transport related emissions associated with the proposed development are below the calculated benchmark.

8.8 The proposed development therefore complies with the requirement that all new developments in London should be at least air quality neutral.

9 Mitigation

Mitigation Included by Design

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

- adoption of a Dust Management Plan (DMP) to minimise the environmental impacts of the construction works;
- setting back of the residential buildings from roads by at least 35 m;
- provision of a new car club parking bay with two years free membership from the date of occupation of the proposed development;
- active provision of electric vehicle charging points for 20% of on-site parking spaces, with passive provision for a further 80% of spaces;
- provision of a detailed travel plan setting out measures to encourage and promote sustainable means of transport (public, cycling and walking);
- provision of a new pedestrian and cycle route through the development site, following a northwest/southeast alignment between Windmill Road and Holly Road;
- provision of long-stay cycle parking for residential use (including larger cycles) at basement level, as well as provision of cycle parking for commercial uses (including larger bikes) at ground floor level; and
- use of all-electric ASHP and PV systems to avoid the need for on-site combustion.

Recommended Mitigation

Construction Impacts

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

9.3 The site has been identified as a *Medium* Risk site during all stages of demolition and construction work, as set out in Table 7. The GLA's SPG on *The Control of Dust and Emissions During Construction and Demolition* (GLA, 2014b) 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 A6.

9.4 The mitigation measures should be written into a DMP. The GLA's guidance suggests that, for a *Medium* 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.

9.5 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.

Operational Impacts

Road Traffic Impacts

9.6 The assessment has demonstrated that the proposed development will have a not significant effect on local air quality as a result of development-generated road traffic emissions. It is, therefore, not considered appropriate to propose mitigation measures for this development.

Impacts of Existing Sources on Future Residents and Users of the Development

9.7 The assessment has demonstrated that future residents and users of the proposed development will experience acceptable air quality. It is, therefore, not considered appropriate to propose 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 local air quality action plan that the GLA is required to produce in order to address limit value exceedances in its area will also help to improve air quality, alongside the implementation of the expanded ULEZ.

Air Quality Neutral

9.9 The assessment has demonstrated that the proposed development is air quality neutral, as required by the London Plan.

10 Conclusions

10.1 The assessment has considered the impacts of the proposed development on local air quality in terms of emissions from road traffic generated by the completed and occupied development and has also considered the air quality conditions that future residents and users will experience. Additionally, it has determined whether or not the proposed development is air quality neutral (as required by the London Plan).

10.2 The assessment has been based on measurements made during 2019, alongside 2019 modelled concentrations (GLA, 2022) (avoiding the impact of the Covid-19 pandemic on measured pollutant concentrations) and assumes these are representative of air quality conditions at the time the development is occupied; this assumption is considered worst-case as it is generally expected that NO_2, PM_{10} and $PM_{2.5}$ concentrations will improve in future years.

Construction Impacts

10.3 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'.

Operational Impacts

10.4 The assessment has demonstrated that the incremental changes to traffic flows on the local road network are below recognised screening thresholds, and that the effects of development-generated road traffic on local air quality will be not significant.

10.5 Additionally, the assessment has determined that pollutant concentrations at the proposed development will be well below the air quality objectives, thus future residents and users will experience acceptable air quality.

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

Air Quality Neutral

10.7 The assessment has shown that the proposed development is air quality neutral, as required by the London Plan.

Policy Implications

10.8 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 185 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 and users. It is also

consistent with Paragraph 186 as it will not affect compliance with the relevant limit values or national objectives.

10.9 The proposed development is also consistent with the LBRuT's Local Plan, Air Quality SPD, Construction Code of Practice and Sustainable Construction Checklist SPD, and is compliant with Policy SI 1 of the London Plan in the following ways:

- it will not lead to further deterioration of existing poor air quality;
- it will not cause or extend any exceedances of legal air quality limits;
- it will not create new exposure to poor air quality; and
- it is air quality neutral.

10.10 Additionally, the proposed development is compliant with the requirements of Part F(1) of the Building Regulations 2010 as future residents and users will experience acceptable air quality.

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12 Glossary

AADT	Annual Average Daily Traffic
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
EPUK	Environmental Protection UK
Exceedance	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
EU	European Union
EV	Electric Vehicle
Focus Area	Location that not only exceeds the EU 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)
HMSO	Her Majesty's Stationery Office
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LBRuT	London Borough of Richmond upon Thames
LDV	Light Duty Vehicles (<3.5 tonnes)
LEZ	Low Emission Zone

µg/m^3	Microgrammes per cubic metre
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
NRMM	Non-road Mobile Machinery
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
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
SPG	Supplementary Planning Guidance
SPD	Supplementary Planning Document
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TEA	Triethanolamine – used to absorb nitrogen dioxide
TEB	Transport Emissions Benchmark
TfL	Transport for London
TRAVL	Trip Rate Assessment Valid for London
ULEZ	Ultra Low Emission Zone
ZEC	Zero Emission Capable

13 Appendices

A1 London-Specific Policies and Measures

London Plan

Electric Vehicle Charging

A1.1 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

A1.2 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"*

A1.3 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)

A1.4 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)

A1.5 London's ULEZ was introduced on 8 April 2019. The ULEZ currently operates 24 hours a day, 7 days a week in the same area as the current Congestion Charging zone. 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 A1.4.

A1.6 The ULEZ currently covers the entire area within the North and South Circular roads, applying the emissions standards set out in Paragraph A1.5. The ULEZ is to be expanded across all London boroughs in August 2023.

Other Measures

A1.7 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.

A1.8 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 (2016), 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 350 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 500 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 500 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 >50,000 m^3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >20 m above ground level
Medium	Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities 10-20 m above ground level
Small	Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months
Earthworks	
Large	Total site area >10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes
Medium	Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes
Small	Total site area <2,500 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <10,000 tonnes, earthworks during wetter months
Construction	
Large	Total building volume >100,000 m^3, piling, on site concrete batching; sandblasting
Medium	Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), piling, on site concrete batching
Small	Total building volume <25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber)
Trackout [a]	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m
Medium	10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m
Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m

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

Step 2B – Define the Sensitivity of the Area

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 A6.

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 a 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 horticultural), 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 locations with a national designation where the features may be affected by dust deposition	Sites of Special Scientific Interest with dust sensitive features
Low	locations with a local designation where the features may be affected by dust deposition	Local Nature Reserves with dust sensitive features

Table 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	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

[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 500 m from sites with a *large* dust emission magnitude, 200 m from sites with a *medium* dust emission magnitude and 50 m from sites with a *small* dust emission magnitude, 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.

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	<200	<350
High	>32 µg/m³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	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			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
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 floor space;
- 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 floor space. 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 nitrogen dioxide), 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 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".

A3.12 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".

A3.13 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

A3.14 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.

A3.15 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.

A3.16 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.

A3.17 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 A6.

A4 Professional Experience

Penny Wilson, BSc (Hons) CSci MIEnvSc MIAQM

Ms Wilson is a Technical Director with AQC, with more than 20 years' relevant experience in the field of air quality. She has been responsible for numerous assessments for a range of infrastructure developments including power stations, road schemes, ports, airports and residential/commercial developments. The assessments have covered operational and construction impacts, including odours. She also provides services to local authorities in support of their LAQM duties, including the preparation of Review and Assessment and Action Plan reports, as well as audits of Air Quality Assessments submitted with planning applications. She has provided expert evidence to a number of Public Inquiries, and is a Member of the Institute of Air Quality Management and a Chartered Scientist.

Samantha Barber, MChem (Hons) AMIEnvSc AMIAQM

Miss Barber is a Senior Consultant with AQC, having joined the company in November 2017. She has carried out assessments of air quality impacts for a range of projects, including EIA schemes, residential, commercial and mixed-use schemes, energy centres and power generation schemes. Miss Barber has also prepared construction dust risk assessments, Air Quality Neutral assessments, local authority Annual Status Reports (ASRs) and odour assessments. She has carried out numerous passive nitrogen dioxide monitoring surveys, and construction dust monitoring, at sites across Greater London.

A5 Air Quality Neutral

A5.1 The GLA's London Plan Guidance; Air Quality Neutral (GLA, 2023) 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.

A5.2 The benchmarks for heating and energy plant (termed 'Building Emissions Benchmarks' or 'BEBs') are set out in Table A5.1, while the 'Transport Emissions Benchmarks' ('TEBs') are set out in Table A5.2.

A5.3 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 A5.3 and Table A5.4 respectively.

Table A5.1: Building Emissions Benchmark NO_x Emission Rates ($gNO_x/m^2/annum$) [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 NO_x. 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 A5.2: 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 A5.3: 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 A5.4: 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
Retail	9.2	5.5	5.4

A6 Construction Mitigation

A6.1 The following is a set of best-practice measures from the GLA guidance (2014b) that should be incorporated into the specification for the works. These measures should be written into a DMP. 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 DMP.

Table A6.1: 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		✓
Preparing and Maintaining the Site		
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	✓	
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. Currently, NRMM used on any site within Greater London are required to meet Stage IIIB of EU Directive 97/68/EC (The European Parliament and the Council of the European Union, 1997) and its subsequent amendments as a minimum, while NRMM used on any site within the Central Activity Zone, Canary Wharf or one of London's Opportunity Areas are required to meet Stage IV of the Directive as a minimum. The proposed development is not within an area where this stricter requirement applies. From January 2025, NRMM used anywhere in London will be required to meet stage IV, while from January 2030 the stage V standard will apply. 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		✓
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		
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		✓
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	✓	