# Air Quality Assessment

## 10 High Street, Uxbridge

April, 2024

F3 Architects

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# Document Control Sheet

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# Glossary of Terms

| Term | Definition |
|---|---|
| AQAP | Air Quality Action Plan |
| AQMA | Air Quality Management Area |
| AQO | Air Quality Objectives |
| AQS | Air Quality Strategy |
| ASR | Annual Status Report |
| DEFRA | Department for Environment, Food and Rural Affairs |
| DMP | Dust Management Plan |
| EPUK | Environmental Protection UK |
| EU | European Union |
| F3A | F3 Architects Ltd |
| IAQM | Institute of Air Quality Management |
| LAQM | Local Air Quality Management |
| LBH | London Borough of Hillingdon |
| LNR | Local Nature Reserve |
| NAQS | National Air Quality Strategy |
| NO | Nitric oxide |
| $NO_2$ | Nitrogen dioxide |
| $NO_x$ | Oxides of nitrogen |
| NRMM | Non-road Mobile Machinery |
| PM | Particulate Matter |
| Ramsar Sites | Designated Wetland |
| SAC | Special Areas of Conservation |
| SPA | Special Protection Areas |
| SPG | Supplementary Planning Guidance |
| SSSI | Sites of Special Scientific Interest |
| WHO | World Health Organisation |

# 1 Introduction

F3 Architects (F3A) are seeking planning permission for a residential development at 10 High Street, Cowley, Uxbridge, UB8 2HN. Hereafter referred to as the 'proposed development', it consists of the demolition of the existing bungalow to the front of the plot to allow access for the construction of three new residential dwellings to the rear.

The local planning authority is the London Borough of Hillingdon (LBH).

DustScanAQ (DS) were appointed to produce an Air Quality Assessment in support of the planning application for the proposed development.

The potential air quality impacts arising as a result of the proposed development have been assessed using the latest planning guidance from Environmental Protection UK (EPUK), the Institute of Air Quality Management (IAQM)[1], Department for Environment, Food and Rural Affairs (DEFRA)[2].

## 1.1 Objectives

This report provides an assessment on the following key issues associated with the construction and operational phases of the proposed development:

- Nuisance, loss of amenity and health impacts associated with the construction phase of the proposed development on sensitive receptors;
- Characterisation of the baseline conditions at the site using monitored pollutant data from LBH and background concentrations from DEFRA background maps;
- Assessment of the suitability of the proposed development for the introduction of new residential receptors; and
- Propose mitigation measures where required.

## 1.2 Proposed Development Location

The proposed development is situated along High Street (A408) in the south of the village of Cowley. The immediate area consists predominantly of residential dwellings, with a small industrial estate to the south of the proposed development, occupied by primarily commercial and recreational businesses and warehouses. The location and outline plans of the proposed development are shown below in Figure 1.1.

The proposed development is located within the London Borough of Hillingdon Air Quality Management Area (AQMA). The location of the proposed development, in the setting of the AQMA and wider area, is shown in Figure 1.2.

[1] IAQM (2017): 'Land Use Planning and Development Control: Planning for Air Quality v1.2'.
[2] Defra (2022): 'Local Air Quality Management – Technical Guidance (TG22)'.

There are no nationally designated ecological sites, such as Site of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA) or designated wetlands (Ramsar Sites) within close proximity to the proposed development.

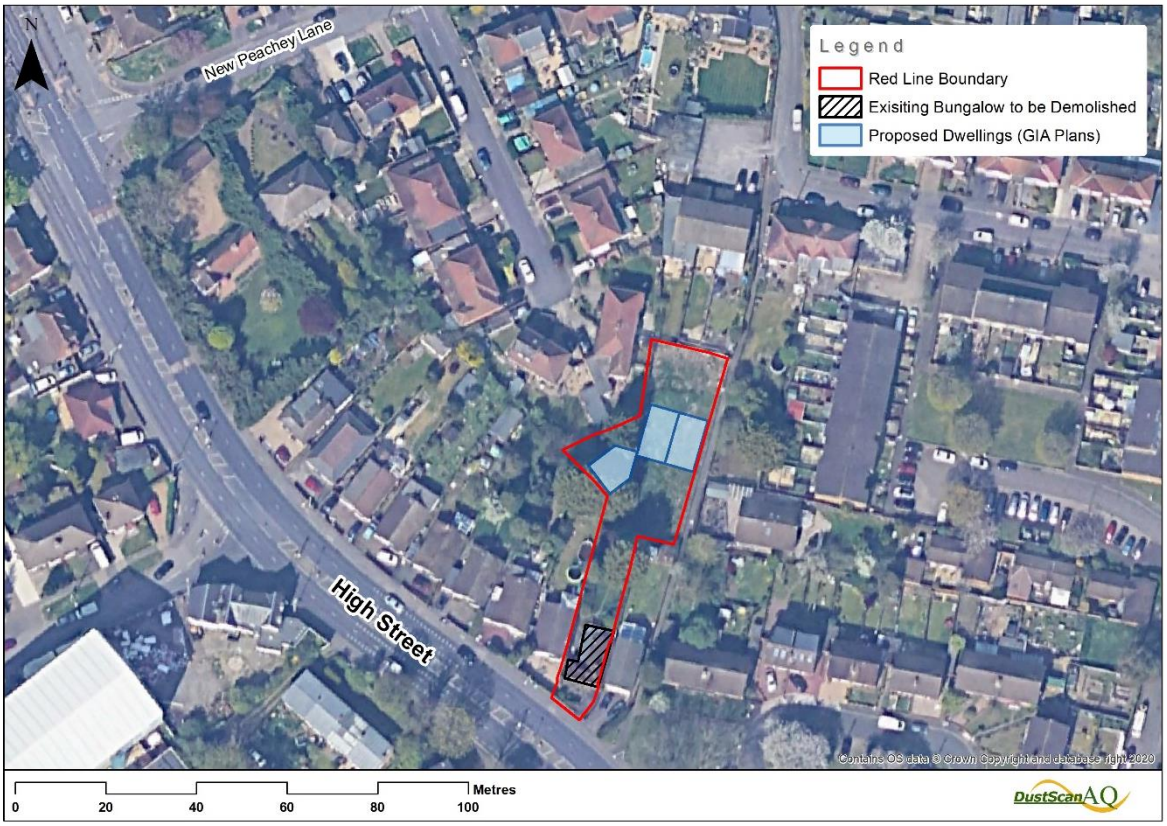


**Figure 1.1: Proposed Development Site Location (Satellite Image: Google Earth 2020)**


**Figure 1.2: Proposed Development within AQMA**

## 1.3 Key Pollutants

The key pollutant associated with the construction phase of the project will be 'disamenity' or 'nuisance' dust. Nitrogen dioxide ($NO_2$) and particulate matter ($PM_{2.5}$ and $PM_{10}$) may also be associated with emissions from non-road mobile machinery (NRMM) and construction related traffic.

The key pollutants associated with the operational phase of the proposed development will be road traffic emissions including $NO_2$ and particulate matter ($PM_{2.5}$ and $PM_{10}$). These pollutants are therefore considered as part of this assessment.

Further details of the key pollutants are presented below.

### 1.3.1 Nitrogen Dioxide ($NO_2$)

$NO_2$ and nitric oxide (NO) are collectively referred to as oxides of nitrogen ($NO_x$). During fuel combustion, atmospheric nitrogen combines with oxygen to form NO, which is not considered harmful. Through a chemical reaction with ozone ($O_3$), NO further combines with oxygen to create $NO_2$ which can be harmful to both human health and the environment. Human health implications arise as particles are capable of penetrating deep into the respiratory tract causing a number of adverse effects on the respiratory system. The foremost sources of $NO_2$ in the UK are combustion activities, mainly road transport and power generation.

### 1.3.2 Particulate Matter

Particulate matter (PM) is a complex mixture of solid and liquid particles suspended in the air. PM can vary widely in size, shape and chemical composition. Particles are therefore generally classified by aerodynamic diameter size as: $PM_{10}$ (diameter of 10 microns (µm) or less); $PM_{2.5}$ (diameter of 2.5 µm or less), also called fine particles; and $PM_{0.1}$ (diameter of 0.1 µm or less), called ultrafine particles.

$PM_{10}$ is known to arise from a number of sources such as construction sites, road traffic movement, industrial and agricultural activities. When inhaled, $PM_{10}$ is likely to be deposited on surfaces of larger airways of the upper region of the lung and is associated with respiratory mortality, exacerbation of airway diseases and reduction of lung function. PM with an aerodynamic diameter of less than 10 µm have a greater impact on human health.

Due to its size, $PM_{2.5}$ is able to accumulate more, stay in the air for longer and travel farther than $PM_{10}$[3] making it a regional pollutant. A significant proportion of $PM_{2.5}$ concentrations in a particular area originating from natural and transboundary contributions and emissions from neighbouring areas[4]. Local authorities therefore face challenges with the management of local $PM_{2.5}$ concentrations. There is increasing pressure on governing bodies to reduce long-term average $PM_{2.5}$ concentrations in light of emerging research, public awareness on air pollution and recent technical advancements in low-cost sensors for monitoring.

In 2019, the Global Burden of Disease estimated the global ambient $PM_{2.5}$-related deaths was over 4 million[5]. The Committee on the Medical Effects of Air Pollution (COMEAP) estimated 29,000 attributable deaths from $PM_{2.5}$ occur a year in the UK[6]. The size and shape of $PM_{2.5}$ means it is likely to travel into, and deposit on the surface of, deeper parts of the lung. A recent review, commissioned by Greater London Authority, highlighted the lifelong health impacts of air pollution and found no evidence to identify a threshold where $PM_{2.5}$ did no harm[7]. Health effects associated with short- and long-term exposure of $PM_{2.5}$ includes a range of respiratory and cardiovascular diseases, increased incidence of strokes, preterm births and lung cancer as well as increased risk of Alzheimer's, Parkinson's and other neurodegenerative diseases[3]. $PM_{2.5}$ is generally associated with combustion and vehicle traffic and is more likely to be associated with the operational phase of the proposed development.

### 1.3.3 Disamenity Dust

'Dust' is generally regarded as particulate matter up to 75 µm in diameter and in an environmental context can be considered in two size categories; coarser dust (particles greater than 10 µm) and fine particulate matter ($PM_{10}$ and $PM_{2.5}$) as described above.

[3] Thangavel, Park and Lee, (2022). 'Recent Insights into Particulate Matter ($PM_{2.5}$)-Mediated Toxicity in Humans: An Overview'. Accessible at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9223652/
[4] Department for Environment, Food and Rural Affairs. (2022), 'Air Quality $PM_{2.5}$ targets: Detailed evidence report'.
[5] Sang et al., (2022). 'The global burden of disease attributable to ambient fine particulate matter in 204 countries and territories, 1990 – 2019: A systemic analysis of the Global Burden of Disease Study 2019'. Accessible at: https://www.sciencedirect.com/science/article/pii/S0147651322004286?via%3Dihub#sec0060
[6] Committee on the Medical Effects of Air Pollutants, (2018). 'Associations of long-term average concentrations of nitrogen dioxide with mortality'
[7] Imperial College London, (2023). 'Impacts of air pollution across the life course – evidence highlight note'

Coarser dust (particles greater than 10 µm) is generally regarded as 'disamenity dust' and can be associated with annoyance, although there are no official standards for dust annoyance[8]. Disamenity dust is more readily described than defined as it relates to the visual impact of short-lived dust clouds and the long-term soiling of surfaces.

Although it is a widespread environmental phenomenon, dust is also generated through many anthropogenic activities including materials handling, construction, demolition and vehicle use. Dust is generally produced by mechanical action on materials and is carried by moving air when there is sufficient energy in the airstream. More energy is required for dust to become airborne than for it to remain suspended.

[8] Note that the expression 'nuisance dust' refers here to 'generally visible particulate matter' rather than specifically and in a legal sense to statutory nuisance, as defined in Section 79 of the Environmental Protection Act 1990.

# 2 Legislation, Planning Policies and Guidance

## 2.1 Legislative Framework

### 2.1.1 International Legislation (European Union)

Whilst the UK has left the European Union (EU), it is relevant to understand the source of the current UK legislation. Following exit day on the 31st January 2020, the current framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018[9]. The EU sets legally binding limit values for outdoor air pollutants to be met by EU countries by a given date. These limit values are based on the World Health Organisation (WHO) guidelines on outdoor air pollutants. These are legally binding and set out to protect human health and the environment by avoiding, preventing or reducing harmful air pollution effects.

Directive 2008/50/EC[10] on ambient air quality and cleaner air for Europe entered into force in June 2008. This merged the existing 'Daughter' Directives[11] [12] [13] [14](apart from the fourth Daughter Directive), maintaining existing air quality objectives set out by 'Daughter' Directives for:

- Sulphur dioxide ($SO_2$);
- Nitrogen dioxide ($NO_2$);
- Oxides of nitrogen ($NO_x$);
- Particulate matter ($PM_{2.5}$ and $PM_{10}$);
- Lead (Pb);
- Benzene($C_6H_6$);
- Carbon monoxide (CO); and
- Ozone ($O_3$).

Directive 2008/50/EC also includes related objectives, exposure concentration obligations and exposure reduction targets for $PM_{2.5}$ (fine particles). The 'Daughter' Directives were based upon requirements set out in the first EU Ambient Air Quality Framework Directive 96/92/EEC[15].

[9] European Union. (2018): http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted
[10] European Union. (2008), 'Ambient air quality assessment management', Framework Directive 2008/50/EC.
[11] European Union. (1999), 'Ambient air quality assessment management', Framework Directive 1999/30/EC.
[12] European Union. (2000), 'Ambient air quality assessment management', Framework Directive 2000/3/EC.
[13] European Union. (2002), 'Ambient air quality assessment management', Framework Directive 2002/3/EC.
[14] European Union. (2004), 'Ambient air quality assessment management', Framework Directive 2004/107/EC.
[15] European Union. (1996), 'Ambient air quality assessment management', Framework Directive 96/62/EC.

### 2.1.2 National Legislation (UK)

#### 2.1.2.1 The Environment Act (1995)

The Environment Act 1995[16] established the system of 'local air quality management' (LAQM) and the designation of Air Quality Management Areas (AQMAs). Part IV of the 1995 Environmental Act and Part II of the Environment (Northern Ireland) Order 2002[17] requires local authorities to designate AQMAs where legal objectives are not being achieved or are not likely to be achieved within the relevant period. Where an AQMA is designated, local authorities are also required to produce an 'Air Quality Action Plan' (AQAP) detailing the pollution reduction measures that need to be adopted to achieve the relevant air quality objectives within an AQMA.

The Environment Act 1995 requires the Government to produce a National Air Quality Strategy (NAQS) for the UK, outlining the air quality standards, objectives and measures for improving ambient air quality.

#### 2.1.2.2 National Air Quality Strategy (UK)

Following the Environment Act 1995, the first Air Quality Strategy (AQS) was published in 1997[18]. A review of the AQS, Air Quality Strategy for England, Scotland, Wales and Northern Ireland, was published in 2007[19], with a review yielding some minor changes in 2011. Each revision introduced strategies and regulations that consider measures for different pollutants by tightening existing objectives and also by introducing new ones to establish a common framework to protect human health and the environment by achieving ambient air quality improvements.

The AQS sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments.

The latest comprehensive review of the AQS for England was published in April 2023[20]. This revised strategy supersedes the Air Quality Strategy: Volume 1 in England.

The AQS sets out the framework to enable local authorities to contribute to long-term air quality goals, with a notable focus on the new $PM_{2.5}$ targets outlined in the Environmental Targets (Fine Particulate Matter) (England) Regulations, published January 2023.

[16] Parliament of the United Kingdom. (1995), 'Environment Act'. King's Printer of Acts of Parliament
[17] Northern Ireland Orders in Council. (2002), 'The Environment (Northern Ireland) Order', No. 3153. King's Printer of Acts of Parliament
[18] Department for Environment Food and Rural Affairs. (1997), 'The United Kingdom National Air Quality Strategy', Cm 3587, Department for Environment Food and Rural Affairs.
[19] Department for Environment Food and Rural Affairs. (2007), 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', Cm 7169, Department for Environment Food and Rural Affairs.
[20] Department for Environment Food and Rural Affairs. (2023), 'Air Quality Strategy: Framework for local authority delivery'.
Accessible at: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery#annex-a-tables-of-pollutants-and-limits

The new AQS outlines the interim targets for $PM_{2.5}$ of an annual mean concentration of 12 µg/m$^3$ and a population exposure reduction target of 22% to be achieved by January 2028, compared to a 2018 baseline.

#### 2.1.2.3 Air Quality Standards (Amendment) Regulations (2016)

The 2008 EU ambient air quality directive, 2008/50/EC, was transposed into UK national legislation through the introduction of the Air Quality Standards (Amendment) Regulations 2016[21]. This also incorporated the fourth EU Daughter Directive (2004/107/EC). The Air Quality Limit Values from the EU directives are transposed as Air Quality Standards.

#### 2.1.2.4 The Environment Act (2021)

Under the Environment Act 2021[22], the Secretary of State must review the NAQS for England at least every five years, with a commitment for an initial review within 12 months of the measures coming into force. The Environment Act 2021 also introduced a commitment to create a legally binding duty on government to reduce the concentration of fine particles ($PM_{2.5}$) in ambient air and to set a new long-term annual mean $PM_{2.5}$ target to supersede the target set out within the Environment (Miscellaneous Amendments) (EU Exit) regulations 2020.

#### 2.1.2.5 The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023)

The Environmental Targets (Fine Particular Matter) (England) Regulations 2023[23] came into force in January 2023. This includes a new annual mean concentration target of less than or equal to 10 µg/m$^3$ for $PM_{2.5}$ by 31$^{st}$ December 2040. There is also an exposure reduction target; the population exposure reduction target is at least a 35% reduction in population exposure by the end of 31$^{st}$ December 2040, compared to a three-year baseline period from 1$^{st}$ January 2016 to 31$^{st}$ December 2018. It is understood that central government is currently consulting on the implications and challenges of the new target in planning.

#### 2.1.2.6 National Air Quality Objectives

A summary of the relevant Air Quality Objectives (AQOs), with consideration to the new Environmental Targets (Fine Particular Matter) (England) Regulations (2023), and where they are applicable are presented in Table 2.1.

The AQO listed in Table 2.1 are only applicable at locations where a member of the public could be reasonably expected to spend the relevant averaging period. Further examples of this are presented in Table 2.2.

**Table 2.1: AQO relevant to the proposed development**

| Pollutant | Averaging Period | AQO (µg/m$^3$) | Exceedance Allowance | Percentile Equivalent |
|---|---|---|---|---|
| Nitrogen Dioxide ($NO_2$) | Annual | 40 | - | - |
| | 1-hour | 200 | 18 per annum | 99.8$^{th}$ |

[21] Statutory Instrument. (2016), 'The Air Quality Standards Regulations', No. 1184. King's Printer of Acts of Parliament.
[22] Parliament of the United Kingdom. (2021), 'Environment Act'. King's Printer of Acts of Parliament
[23] Statutory Instrument. (2023), 'The Environmental Targets (Fine Particulate Matter) (England) Regulations', No. 96. King's Printer of Acts of Parliament.

| Pollutant | Averaging Period | AQO (µg/m$^3$) | Exceedance Allowance | Percentile Equivalent |
|---|---|---|---|---|
| Particulate Matter (as $PM_{10}$) | Annual | 40 | - | - |
| | 24-hour | 50 | 35 per annum | 90.4$^{th}$ |
| Particulate Matter (as $PM_{2.5}$) | Annual | 10[a] | - | - |

(a) - The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10 µg/m³ ("the target level").

**Table 2.2: Examples of where the AQO should apply**

| Averaging period | Objectives should apply at | Objectives should not apply at |
|---|---|---|
| Annual | All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc. | Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence.<br>Gardens of residential properties.<br>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term. |
| 24 Hour | All locations where the annual mean objective would apply, together with hotels and gardens of residential properties[(a)]. | Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term. |
| 1 Hour | All locations where the annual mean and 24 and 8-hour mean objectives apply.<br>Kerbside sites (for example, pavements of busy shopping streets).<br>Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more.<br>Any outdoor locations where members of the public might reasonably have expected to spend one hour or longer. | Kerbside sites where the public would not be expected to have regular access. |

#### 2.1.2.7 Statutory Nuisance

It is recognised that the planning system presents a way of protecting amenity. However, in cases where planning conditions are not applicable to a development/installation, the requirements of the Environmental Protection Act 1990 still apply. Under Part III of the

Environmental Protection Act 1990, local authorities have a statutory duty to investigate any complaints of:

- *"any premises in such a state as to be prejudicial to health or a nuisance*
- *smoke emitted from premises so as to be prejudicial to health or a nuisance*
- *fumes or gases emitted from premises so as to be prejudicial to health or a nuisance*
- *any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance*
- *any accumulation or deposit which is prejudicial to health or a nuisance"*

Where the local authority establishes any one of these issues constitutes a statutory nuisance and believes it to be unreasonably interfering with the use or enjoyment of someone's premises and/or is prejudicial to health, an abatement notice will be served on the person responsible for the offence or the owner / occupier. Failure to comply with the notice could lead to a prosecution. However, it is considered as a defence if the best practicable means to prevent or to counteract the effects of the nuisance are employed.

## 2.2 Planning Policy

### 2.2.1 National Policy

#### 2.2.1.1 National Planning Policy Framework (2023)

The principle national planning policy framework in respect to the proposed development is the National Planning Policy Framework (NPPF)[24]. This sets out the government's planning policies for England and how they should be applied. The revised NPPF was published in December 2023 by the Department for Levelling Up, Housing and Communities (DLUHC).

The NPPF 2023 contains five paragraphs which are relevant to air quality.

Paragraph 109 states that:

> *"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."*

Paragraph 180 (e) states that:

> *"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,*

[24] National Planning Policy Framework. Accessible at: https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf

*wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans….."*

Paragraph 191 includes

*"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.:"*

Paragraph 192 states 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."*

Paragraph 194 states that:

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

#### 2.2.1.2 National Planning Practice Guidance

The DLUHC (formerly the Department for Communities and Local Government) published a number of supporting web based resources of Planning Practice Guidance (PPG)[25] to supplement the NPPF. With respect to air quality the PPG[26] provides guidance on when air quality is relevant to a planning application. It 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*

[25] National Planning Practice Guidance web-based resource. Accessible at: http://planningguidance.planningportal.gov.uk/
[26] Paragraph: 005 Ref ID 32-005-20140306, revision date 01.11.2019

*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."*

The PPG also states that, when deciding whether air quality is relevant to a planning application, the applicant should consider whether the proposal will:

- *"Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield……*
- *Introduce new point sources of air pollution…..,*
- *Expose people to harmful concentrations of air pollutants …..,*
- *Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations….,*
- *Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value."*

#### 2.2.1.3 Clean Air Strategy (2019)

The Clean Air Strategy[27] was published by the Department of Environment Food and Rural Affairs (DEFRA) in 2019 as part of the 25 Year Environment Plan. It also complements the Industrial Strategy and the Clean Growth Strategy. The Strategy sets out the action that is required across governments and society to meet the AQOs. Action includes new legislation to create a more coherent framework for action to tackle air pollution, underpinned by 'England-wide powers' to control major sources of air pollution and 'local powers' to take actions in areas with an air pollution problem. These will support the creation of Clean Air Zones (CAZs) to lower emissions from all sources of air pollution, back up with clear enforcement mechanisms.

### 2.2.2 Regional Policy

#### 2.2.2.1 London Plan 2021

The new London Plan[28] of 2021 includes one policy that is specifically related to air quality: "*Policy SI 1: Improving air quality*". Policy SI 1 states:

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

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

*1) Development proposals should not:*

*a) lead to further deterioration of existing poor air quality*

[27] Department of Environment Food and Rural Affairs. (2019) 'Clean Air Strategy 2019'
[28] Greater London Authority, (2021). 'The London Plan: The Spatial Development Strategy for Greater London'.

*b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits*

*c) create unacceptable risk of high levels of exposure to poor air quality.*

*2) In order to meet the requirements in Part 1, as a minimum:*

*a) development proposals must be at least Air Quality Neutral*

*b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures*

*c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1*

*d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.*

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

*1) how proposals have considered ways to maximise benefits to local air quality, and*

*2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.*

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

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

Within the new London Plan several other policies also make reference to air quality. The relevant aspects of these polices which are pertinent to this proposed development are reproduced below.

*"Policy D1: London's form, character and capacity for growth"* states:

*"A Boroughs should undertake area assessments to define the characteristics, qualities and value of different places within the plan area to develop an understanding of different areas' capacity for growth. Area assessments should cover the elements listed below:*

*…..*

*5) air quality and noise levels"*

*"Policy D3: Optimising site capacity through the design-led approach"* states:

*"A All development must make the best use of land by following a design-led approach that optimises the capacity of sites, including site allocations. Optimising site capacity means ensuring that development is of the most appropriate form and land use for the site. The design-led approach requires consideration of design options to determine the most appropriate form of development that responds to a site's context and capacity for growth, and existing and planned supporting infrastructure capacity (as set out in Policy D2 Infrastructure requirements for sustainable densities), and that best delivers the requirements set out in Part D.*

*B Development proposals should:*

*….*

*9) help prevent or mitigate the impacts of noise and poor air quality"*

*"Policy SI3: Energy Infrastructure"* states:

*"D Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:*

*2) CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality."*

#### 2.2.2.2 The Mayor of London Environment Strategy

The Mayor of London Environment Strategy[29], published on 31st May 2018, integrates every aspect of London's environment into different categorised areas. The document includes several transport and non-transport related policy measures outlined in Chapter 4, highlighting the need for improvement in London's air quality.

Policy 4.2 states:

- *"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."*
- *"Reduce emissions from non-road transport sources, including by phasing out fossil fuels."*

Proposals for this policy include the phasing out of fossil fuels for private and public transport, as well as from freight vehicles, prioritising action on diesel fuels and implementing the switch to zero emission technologies. The reduction in emission from NRMM, construction and demolition sites, homes and workplaces and large-scale generators is proposed for this policy.

[29] Greater London Authority. (2018), 'London Environment Strategy'.

Policy 4.3 states:

- *"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."*
- *"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."*
- *"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."*
- *"Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces."*

Proposals for this policy include the switching of fleet vehicles to zero emission capability, implementation of local zero emission zones from 2020, ensure all new large-scale developments are 'Air Quality Neutral' and maintain Air Quality Neutral requirements for all developments. The reduction in emissions from wood and other solid fuel burning, using the planning system to reduce indoor exposure though design measures, preventing poor air quality entering the building and ensuring $CO_2$ and pollution targets are achieved are also proposals included for this policy.

#### 2.2.2.3 The Mayor of London Transport Strategy

In March 2018 the Mayor of London published the Mayors Transport Strategy[30], setting out the Mayor's policies and proposals, enabling transport in London to be reshaped over the next 20 years.

The key themes within the strategy are; healthy streets and healthy people, good public transport experiences, new homes and jobs.

Chapter 3, section C "*Improving air quality and the environment*" includes policies 6 and 7 which relate to transport and air quality.

Policy 6 states:

> *"The Mayor, through TfL and the boroughs, and working with stakeholders, will take action to reduce emissions – in particular diesel emissions – from vehicles on London's streets, to improve air quality and support London reaching compliance with UK and EU legal limits as soon as possible. Measures may include retrofitting vehicles with equipment to reduce emissions, promoting electrification, road charging, the imposition of parking charges/ levies, responsible procurement, the making of traffic restrictions/ regulations and local actions."*

[30] Greater London Authority. (2018), 'Mayor's Transport Strategy'.

Policy 7 states:

> *"The Mayor, through TfL and the boroughs, and working with stakeholders, will seek to make London's transport network zero emission by 2050, contributing towards the creation of a zero carbon city, and also to deliver further improvements in air quality to help meet tighter air quality standards, including achieving a health-based target of 10 µg/m$^3$ for $PM_{2.5}$ by 2030. London's streets and transport infrastructure will be transformed to enable zero emission operation, and the switch to ultra-low and zero emission technologies will be supported and accelerated."*

### 2.2.3 Local Policy

#### 2.2.3.1 London Borough of Hillingdon Local Plan

The LBH Local Plan: Part 1[31] was adopted in November 2012 and sets out strategic policies and framework for development within the borough until 2026.

The Local Plan contains two strategic objectives relating to air quality.

Policy SO10 states:

> *'Improve and protect air and water quality, reduce adverse impacts from noise including the safeguarding of quiet areas and reduce the impacts of contaminated land.'*

Policy SO11 states:

> *'Address the impacts of climate change, and minimise emissions of carbon and local air quality pollutants from new development and transport.'*

Policy EM8 relates to Land, Water, Air and Noise. On air quality, Policy EM8 states:

> *'All development should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.*
>
> *All major development within the Air Quality Management Area (AQMA) should demonstrate air quality neutrality (no worsening of impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increase provision for vehicles with cleaner transport fuels; deliver increased planting through soft landscaping and living walls and roofs; and provide a management plan for ensuring air quality impacts can be kept to a minimum.*
>
> *The Council seeks to reduce the levels of pollutants referred to in the Government's National Air Quality Strategy and will have regard to the Mayor's Air Quality Strategy. London Brough's should also take account of the findings of the Air "Quality Review and Assessments and Action plans in particular where Air Quality Management Areas have been designated.*

[31] London Borough of Hillingdon, A Vision For 2026, Local Plan: Part 1, Strategic Policies

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

#### 2.2.3.2 London Borough of Hillingdon Air Quality Action Plan

The LBH Air Quality Action Plan[32], published in 2019, outlines the actions that LBH will take to improve air quality. The Air Quality Action Plan prioritises the following actions:

- Lead by example in relation to emissions from the Council's fleet and building stock;
- Reduce public exposure and improve air quality around schools;
- Prioritise the implementation of improvement strategies in the AQ Focus Areas;
- Ensure the integration of Transport for London's Healthy Streets Approach in relevant council work programmes, ensuring that air quality is specifically addressed;
- Ensure the planning system supports the achievement of air quality improvements in relation to new developments;
- Raise public awareness via targeted campaigns for example concerning air quality risks and alternatives to car travel;
- Promote the use of greener walking and cycling routes to help the delivery of the Council's transport objective of an increased mode share for walking and cycling;
- Work with external stakeholders where they are responsible for sources of pollution that are outside the control of the Council. We will also lobby regional and central government on policies and issues beyond Hillingdon's influence.

## 2.3 Guidance Documents

### 2.3.1 Local Air Quality Management Technical Guidance (2022)

The LAQM Technical Guidance 2022[33] (TG22), published by the DEFRA in 2022, is designed to support local authorities in carrying out their duties under the Environment Act 1995, the Environment (Northern Ireland) Order 2002, and subsequent regulations. Any guidance or tools used in this assessment have been provided by LAQM.TG(22), in line with the Council's own work on air quality following the guiding principles.

[32] The London Borough of Hillingdon Air Quality Action Plan (2019)
[33] LAQM Technical Guidance 2022. Accessible at:
https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf

### 2.3.2 Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) Planning Guidance

The Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) published guidance for the consideration of air quality within land-use planning and development control processes in January 2017[34]. In the absence of any statutory guidance on methodology, the IAQM/EPUK guidance is considered best practice and informs this assessment.

### 2.3.3 Greater London Authority Guidance

The Greater London Authority (GLA) have published a series of guidance documents for planning applications to adhere to.

#### 2.3.3.1 The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance

The Supplementary Planning Guidance (SPG) aims to reduce emissions of dust, $PM_{2.5}$ and $PM_{10}$ from construction and demolition activities in London. It also aims to manage emissions of $NO_x$ by a new non-road mobile machinery ultra low emissions zone (ULEZ).

The Control of Dust and Emissions During Construction and Demolition SPG[35], published July 2014, formed part of the Implementation Framework of the London Plan 2011[36]. The SPG sets out the methodology for assessing the air quality impacts from construction and demolition as well as identifies good practice for mitigating and managing the impacts. The statutory SPG is considered best practice and therefore informs this assessment.

The approach of this SPG is based on the site evaluation process set out in the IAQM 2014 Guidance on the Assessment of Dust from Demolition and Construction[37], most recently updated in January 2024. As stated in the SPG, "*This guidance is periodically updated and, therefore, the latest version of the IAQM Guidance should be used."*

#### 2.3.3.2 London Plan Guidance: Air Quality Neutral

Policy SI 1 of the London Plan requires new developments to be Air Quality Neutral. To assist developers, boroughs and others involved in designing and planning new development, the London Plan Guidance (LPG) on Air Quality Neutral[38] has been prepared. The Air Quality Neutral LPG was published February 2023, formally replacing prior draft guidance.

The Air Quality Neutral LPG sets air quality benchmarks for all development, in order to ensure that their transport and building emissions do not worsen air quality in London. The guidance also outlines a simplified approach for minor developments.

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[34] The Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) (2017) 'Land-Use Planning & Development Control: Planning For Air Quality'. Accessible at: https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

[35] Greater London Authority. (2014), 'The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance'

[36] Greater London Authority. (2011), chapters Accessible at: https://www.london.gov.uk/programmes-strategies/planning/london-plan/past-versions-and-alterations-london-plan/london-plan-2011

[37] Institute of Air Quality Management. (2014) 'Guidance on assessment of dust form demolition and construction'. Accessible at: https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf

[38] Greater London Authority (2023), 'London Plan Guidance: Air Quality Neutral'.

#### 2.3.3.3 London Plan Guidance: Air Quality Positive

The Air Quality Positive LPG [39] identifies and implements methods to push beyond compliance with the Air Quality Neutral LPG benchmarks and the minimum requirements of an air quality assessment. Air Quality Positive is applied at the plan-making stage of masterplans, such as SPGs, or for large-scale developments that are likely to be subject to an Environmental Impact Assessment.

[39] Greater London Authority (2023), 'London Plan Guidance: Air Quality Positive'.

# 3 Methodology

This section sets out the approach taken to assess the potential impacts on air quality during the construction and operational phases of the proposed development.

## 3.1 Scope of the Assessment

The assessment is based on the following scope of work presented in Table 3.1:

**Table 3.1: Scope of Work**

| Scope | Consideration |
|---|---|
| Spatial | The assessment considers the impact of $NO_2$, $PM_{10}$ and $PM_{2.5}$ emissions from the local roads on the proposed development site. |
| Temporal | The construction phase impacts resulting from the proposed development have been considered for the earliest anticipated construction year (2025).<br>The operational phase impacts resulting from the proposed development have been considered for the earliest possible year of occupation (2026). |

## 3.2 Construction Phase

The proposed development has the potential to generate dust during the construction phase of the project. Although there are no standards (such as AQO) for dust disamenity or annoyance, various 'customs and practice' criteria have become established.

For the purposes of this assessment, IAQM's 2024 Construction Dust Risk guidance[40] has been used to carry out a construction dust risk assessment. The IAQM guidance provides a methodology (Appendix B) to evaluate potential risk of dust generation for a development and the level of mitigation required. The impact of the development is described using one of the following three categories: 'Low Risk', 'Medium Risk' and 'High Risk'. Based on the risk level, appropriate mitigation measures can be considered to minimise any risk of dust impacts from the construction phase.

## 3.3 Operational Phase

The IAQM and EPUK planning guidance (Appendix A) which informs this assessment contains indicative criteria on when to proceed to a Detailed Air Quality Assessment (AQA). The criteria relating to changes in traffic flow are as follows:

A change of LDV flows of:

- more than 100 AADT within or adjacent to an AQMA; and

[40] Institute of Air Quality Management (2024), 'Guidance on the Assessment of Dust from Demolition and Construction'

- more than 500 AADT elsewhere.

A change of HDV flows of:

- more than 25 AADT within or adjacent to an AQMA; and
- more than 100 AADT elsewhere.

The proposed development is located within an AQMA and therefore the stricter criteria apply. From the size of the proposed development, the indicative criteria will not be exceeded. Therefore, detailed modelling of transport emissions has been scoped out.

The proposed development will not use any central plant (CHP/boiler) with associated flue stacks. The assessment of operational point source emissions can therefore be scoped out.

# 4 Baseline Conditions

The following section sets out the baseline conditions in relation to air quality at the proposed development site. For the purpose of this assessment, data has been obtained from the 2023 LBH[41] Annual Status Report (ASR) and the DEFRA air quality resource website[42].

## 4.1 LBH Automatic Monitoring

LBH undertook automatic monitoring at 12 locations throughout 2022. The closest of these, monitoring station 'HIL', is approximately 3 km from the proposed development and is not considered to be representative of air quality at the proposed development. Therefore, data from LBH automatic monitoring stations have not been considered further in this assessment.

## 4.2 Non-Automatic (Diffusion Tube) Monitoring

LBH undertook diffusion tube monitoring at 44 sites across its jurisdiction in 2022. The closest diffusion tube to the proposed development (HILL19) is located approximately 940 m south-southeast and is located in a background location. Diffusion tube HILL13 is in a roadside location on a residential backstreet approximately 1 km south. The locations of these two diffusion tubes are illustrated in Figure 4.1 below.

Table 4.1 presents the monitored $NO_2$ annual mean concentrations recorded at these sites for the latest three-year period of available data.

[41] The London Borough of Hillingdon (2023). 'Air Quality Annual Status Report for 2022'.
[42] Department for Environmental Food and Rural Affairs. Accessible at https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018.


**Figure 4.1: LBH Diffusion Tube Location**

**Table 4.1: LBH Diffusion Tube $NO_2$ Annual Mean Concentrations**

| LBH Diffusion Tubes | | | | |
|---|---|---|---|---|
| Site ID | Site Classification | Annual mean $NO_2$ Concentration ($\mu g/m^3$) | | |
| | | 2020 | 2021 | 2022 |
| HILL13 | Roadside | 19.9 | 21.0 | 21.0 |
| HILL19 | Background | 27.1 | 27.6 | 28.7 |

Notes: Exceedance of the $NO_2$ annual mean AQO of 40 µg $m^{-3}$ are shown in **bold.** The percentage data capture for the monitoring period is presented in parentheses.

$NO_2$ annual means in excess of 60 µg $m^{-3}$, indicating a potential exceedance of the $NO_2$ 1-hour mean objective are shown in **bold** and **underlined.**

Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Data was bias adjusted with a factor of 0.92 for 2022, 0.88 for 2021 and 0.84 for 2020.

## 4.3 DEFRA Modelled Background Pollution Concentrations

DEFRA provides background pollution concentration estimates to assist local authorities in undertaking their 'Review and Assessment' work. This data is available to download from the DEFRA air quality resource website for $NO_x$, $NO_2$, $PM_{10}$ and $PM_{2.5}$ for every 1 km X 1 km grid square for all local authorities. The current dataset is based on 2018 background data and future year projections are available for 2018 to 2030. The background dataset

provides breakdown of pollution concentrations by different sources (both road and non-road sources).

Table 4.2 presents the predicted background concentrations for the latest year of available monitoring data (2022) from LBH and the earliest anticipated year of occupation (2026).

**Table 4.2: DEFRA Projected Background Concentrations at proposed development**

| Year | Annual Mean Concentration (µg/m$^3$) | | |
|---|---|---|---|
| | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 2022 | 18.7 | 16.0 | 10.7 |
| 2026 | 16.4 | 15.4 | 10.3 |

Note: Data presented within the table are derived from the following ordinance survey grid square: 505500, 181500.

## 4.4 Summary of Baseline Conditions

The closest automatic monitoring station LBH operates is approximately 3 km away from the proposed development and is not considered representative.

The closest monitors to the proposed development are HILL19 and HILL13 which are approximately 940 m and 1 km to the south-east and south of the proposed development site respectively. Based on current site plans, the locations of the proposed residential dwellings are set back from the kerb of the A408 by approximately 50 m at their closest point. Both HILL13 and the proposed dwellings are considerably set back from the A408 surrounded by residential dwellings. HILL13 is considered most representative of air quality at the proposed development.

# 5 Potential Impacts

## 5.1 Construction Phase

The earliest construction year of the proposed development is likely to be 2025. The impacts from demolition, earthworks, construction and trackout have all been considered. To assess the worst-case scenario, it has been assumed that all activities will be carried out for the duration of the construction period. Figure 5.1 shows the construction dust assessment study area based on the recommended distances by IAQM.


**Figure 5.1: Construction Dust Risk Assessment Buffers**

Magnitude and sensitivity descriptors that have been applied to assess the overall impact of the construction phase are presented in Appendix B.

The dust emission magnitude for demolition is expected to be 'Small', with the total site area of the existing bungalow to be demolished less than 12,000 $m^3$.

The dust emission magnitude for earthworks is expected to be 'Small', with the total site area approximately 1,290 $m^2$.

The dust emission magnitude from construction is expected to be 'Small', with a total construction volume less than 12,000 $m^3$.

It is anticipated that the outward daily peak HGV movements will be less than 20 on average, therefore the dust emission magnitude for trackout has been assigned as 'Small'.

There are no ecological receptors within 50 m of the site, therefore the risk of construction dust impacts on ecological receptors are considered to be negligible and are not considered further within the construction dust risk assessment.

**Table 5.1: Dust Emission Magnitude**

| Activity | Dust Emission Magnitude |
|---|---|
| Demolition | Small |
| Earthworks | Small |
| Construction | Small |
| Trackout | Small |

It is considered that residential receptors have a 'High' sensitivity to dust soiling and human health impacts. Table 5.2 presents the sensitivity of the surrounding area to effects caused by construction activities and is based on the criteria presented in Appendix B.

**Table 5.2: Sensitivity of Study Area**

| Potential Impact | Sensitivity of the surrounding area | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Medium | Medium | Medium | Medium |
| Human Health | Low | Low | Low | Low |

The overall risk of dust soiling and human health impacts to high sensitivity receptors are presented in Table 5.3. The risk is based on the criteria presented in Appendix B.

**Table 5.3: Summary of the Risk of Construction Dust Effects**

| Sensitivity of Area | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Low Risk | Low Risk | Low Risk | Low Risk |
| Human Health | Negligible | Negligible | Negligible | Negligible |

Based upon the above, the risk associated with dust soiling is considered to be no more than 'Low'. With respect to human health impacts, the risk has been classified as 'Negligible'.

Mitigation measures appropriate for the proposed development are presented in Appendix C.

Following the implementation of these mitigation measures, the impacts from the construction phase of the proposed development on dust soiling and human health are considered to be not significant.

## 5.2 Operational Phase

### 5.2.1 Residential Suitability

The proposed development is situated at 10 High Street in a predominantly residential area in south Cowley, Uxbridge.

The proposed development is set back approximately 50 m form the kerb of the A408; $NO_2$ concentration declines steeply with distance from a source. As mentioned in Section 4.4, the diffusion tube monitor HILL13 is considered most representative of air quality at the proposed development. The annual mean $NO_2$ concentration at HILL13 for the latest year of available data, 2022, was 21.0 µg/m$^3$, 47% below the $NO_2$ annual mean objective of 40 µg/m$^3$.

Therefore, it is considered that the $NO_2$ concentration at the site of the proposed development will be comfortably below the long and short term AQO for $NO_2$.

DEFRA background concentrations for the grid square 505500, 181500 are considered to be the most representative of likely $PM_{10}$ and $PM_{2.5}$ concentrations at the proposed development. For 2026, the modelled background $PM_{10}$ concentrations is 15.4 µg/m$^3$, comfortably below its respective AQO.

The modelled background $PM_{2.5}$ concentration for 2026 was 10.3 µg/m$^3$, above the newly legislated target for $PM_{2.5}$ of 10 µg/m$^3$ to be achieved by the target date of 31$^{st}$ December 2040, but 14% below the new interim target of $PM_{2.5}$ of 12 µg/m$^3$, to be achieved by January 2028.

The Detailed Evidence produced[43] by DEFRA as part of the consultation on the new targets details ways in which $PM_{2.5}$ differs as a pollutant from $NO_2$ and $PM_{10}$. The Detailed Evidence includes:

> *"**$PM_{2.5}$ is a regional pollutant.** A significant proportion of $PM_{2.5}$ concentrations in a particular area is from natural and transboundary contributions and emissions from neighbouring areas. This means that local authorities can influence, but not completely control $PM_{2.5}$ concentrations. Also, the impact of local action may not be directly seen on local concentrations but benefit the whole region/country. This would make it difficult to evaluate progress. It would be difficult to declare air quality management areas as high concentrations are likely to spread over a large area, rather than a specific section of road, for example.*
>
> ***$PM_{2.5}$ is from multiple sources**. Unlike $NO_2$ exceedances which generally occur close to busy roads due to emissions from road traffic, $PM_{2.5}$ is generated from multiple sources and in multiple locations. This means it requires greater collaboration to address."*

[43] Department for Environment, Food and Rural Affairs. (2022), 'Air Quality $PM_{2.5}$ targets: Detailed evidence report'.

With respect to the role of local authorities in managing $PM_{2.5}$ within their jurisdiction, the 2023 Air Quality Strategy[44] states the following:

> *"As well as meeting local objectives, local authorities play a role in contributing to national targets. The government recognises that as a regional pollutant, many of the sources of $PM_{2.5}$ are outside of local authority control. However, there are sources of $PM_{2.5}$ over which local authorities do have control. Therefore, while $PM_{2.5}$ is not currently part of the Local Air Quality Management framework, the government still expects all local authorities to effectively use their powers to reduce $PM_{2.5}$ emissions from the sources which are within their control.*
>
> *…*
>
> *We have been clear in guidance to local authorities since 2016 that we expect local authorities to use their powers to reduce $PM_{2.5}$. We still have not seen sufficient action from the majority of local authorities. In light of the new targets, if we consider further action to be insufficient, we will consult on introducing a standalone legal duty on local authorities to take action to reduce $PM_{2.5}$ emissions."*

It is considered that the $PM_{2.5}$ concentration at the site of the proposed development will be below the interim target of $PM_{2.5}$ by January 2028. The newly legislated $PM_{2.5}$ target of 10 $\mu g/m^3$ is generally exceeded across London, and is anticipated to be in compliance by 2040.

Therefore, based upon the above, it can be concluded that the site of the proposed development is suitable for the introduction of new residential receptors.

### 5.2.2 Air Quality Neutral Assessment

The new Air Quality Neutral London Plan[45], published February 2023, formally replaced the prior draft guidance.

The London Borough of Hillingdon requires all new developments to be at least air quality neutral; an Air Quality Neutral Assessment (AQNA) is therefore required for all planning applications. The published guidance states the following:

> *"There are two sets of benchmarks, which cover the two main sources of air pollution from new developments:*
>
> - *Building Emissions Benchmark (BEB) – emissions from equipment used to supply heat and energy to the buildings*
> - *Transport Emissions Benchmark (TEB) – emissions from private vehicles travelling to and from the development.*
>
> *A development must meet both benchmarks separately in order to be Air Quality Neutral. If one or both benchmarks are not met, appropriate mitigation or*

[44] Department for Environment, Food and Rural Affairs. (2023), 'Air Quality Strategy: Framework for local authority delivery'.
[45] Greater London Authority, (2023). 'London Plan guidance: Air Quality Neutral'.

*offsetting will be required (see section 5). As the benchmarks are based on evidence and are designed to be challenging but achievable, mitigation or offsetting provisions should be the exception.*

*Calculations against the benchmarks should inform the design process. However, the final AQN Assessment itself can only be prepared once the energy and transport strategies for a development are suitably finalised or, where these strategies are not part of the application, development details are finalised for planning submission."*

***Building Emissions***

Section 3 of the guidance sets out the approach for calculating the Building Emission Benchmark (BEB). The client has confirmed that the proposed development will be heated by air-source heat pumps and therefore benchmarking for building emissions is not required.

***Transport Emissions***

Section 4 of the guidance sets out the approach for calculating the Transport Emission Benchmark (TEB). The guidance sets out the benchmark trip rates depending on land-use, number of units, and whether the development is in Central, Inner or Outer London.

Based on current site plans the proposed development will have four parking spaces, including one disabled persons parking space. The proposed development is located in Outer London with a PTAL of 1b. The proposed development is therefore below the maximum parking provision defined in the London Plan. Benchmarking of transport emissions is not required.

***Conclusion***

Based on the planning guidance and details of the proposed development set out above, the proposed development is considered to be Air Quality Neutral with respect to both building and transport emissions.

# 6 Mitigation Measures

Mitigation measures appropriate for the construction phase of the proposed development are presented in Appendix B.

The proposed development site is considered to be suitable for the introduction of residential receptors with no additional mitigation required.

It is understood that the proposed development will include solar panels, to be confirmed in the energy statement.

The proposed development will provide EV charging spaces in line with Part S of the Building Regulations.

The development is not expected to have a significant impact on local air quality from either building or transport emissions and therefore no further mitigation is required.

# 7 Conclusion

This report provides an assessment on the following key issues associated with the construction and operational phases of the proposed development at 10 High Street, Cowley, Uxbridge:

- Nuisance, loss of amenity and health impacts associated with the construction phase of the proposed development on sensitive receptors;
- Characterisation of the baseline conditions at the site using monitored pollutant data from LBH and background concentrations from DEFRA background maps;
- Assessment of the suitability of the proposed development for the introduction of new residential receptors; and
- Propose mitigation measures where required.

An assessment of the construction and operational air quality impact has been undertaken for the proposed development.

A qualitative assessment of the construction phase activities has been carried out. The largest risk of these activities with respect to dust soiling was considered to be 'Low', while that towards human health was also considered to be 'Negligible'. Following proper implementation of the measures recommended in Appendix B, the impact of emissions during construction of the proposed development are likely to be 'Negligible' and therefore 'Not Significant'.

The annual mean and one hour mean $NO_2$ AQO are expected to be met at the proposed development for the anticipated earliest year of occupation. Likewise, the annual mean and 24-hour mean $PM_{10}$ AQO is expected to be met at the proposed development for the earliest year of occupation.

The annual mean for $PM_{2.5}$ is expected to exceed the newly legislated for AQO to be achieved by 2040, but be below the interim target to be achieved by 2028. It is expected that the both the interim target and AQO will be achieved by their target dates.

Following Air Quality Neutral Guidance, the proposed development is considered to be Air Quality Neutral.

Based upon the above, no further air quality mitigation measures are recommended.

It can therefore be concluded that the proposed development is not considered to conflict with national, regional and local planning guidance.

# Appendix A: Operational Impact Assessment

## Methodology

The EPUK & IAQM guidance refers to the Town and Country Planning (Development Management Procedure) Order (England) 2010 [(Wales) 2012] for a definition of a 'major' development when scoping assessments required for the planning process. Based on the guidance, a 'major' development is such development where:

- The number of dwellings is 10 or above;
- The residential development is carried out on a site of more than 0.5ha where the number of dwellings is unknown;
- The provision of more than 1,000 $m^2$ commercial floorspace; or,
- Development carried out on land of 1ha or more.

It is recommended that consideration should be given to reduce impacts from any 'major' developments by considering:

- The impact of existing sources in the local area on the proposed development; and
- The impacts of the proposed development on the local area.

The assessment process involves two stages where:

**Stage 1** scope out the need for an air quality assessment and **Stage 2** provide guidance of determining the level of assessment required for a project.

**Table A 1** below sets out the Stage 1 criteria to determine the need to assess impacts arising from small developments and **Table A 2** provides more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area.

**Table A 1: Stage 1 Criteria to Proceed to Stage 2**

| Criteria to Proceed to Stage 2 | |
|---|---|
| A | If any of the following apply:<br>• 10 or more residential units of a site area of more than 0.5ha<br>• More than 1,000$m^2$ of floor space for all other uses or a site area greater than 1ha |
| B | Coupled with any of the following:<br>• The development has more than 10 parking spaces<br>• The development will have a centralised energy facility or other centralised combustion process |

**Table A 2: Indicative Criteria for Requiring an Air Quality Assessment**

| The development will | Indicative Criteria to Proceed to an Air Quality Assessment |
|---|---|
| 1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight). | A change of LDV flows of:<br>- more than 100 AADT within or adjacent to an AQMA<br>- more than 500 AADT elsewhere. |
| 2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight). | A change of HDV flows of:<br>- more than 25 AADT within or adjacent to an AQMA<br>- more than 100 AADT elsewhere. |
| 3. Realign 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. |
| 4. Introduce a new junction or remove an existing junction near to relevant receptors. | Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts. |
| 5. Introduce or change a bus station. | Where bus flows will change by:<br>- more than 25 AADT within or adjacent to an AQMA<br>- more than 100 AADT elsewhere. |
| 6. Have an underground car park with extraction system. | The ventilation extract for the car park will be within 20 m of a relevant receptor.<br>Coupled with the car park having more than 100 movements per day (total in and out). |
| 7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.<br><br>NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping. | Typically, any combustion plant where the single or combined $NO_x$ emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion.<br><br>In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.<br><br>Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable. |

# Appendix B: Construction Dust Risk Assessment Criteria

IAQM guidance framework on assessing the risk of dust proposes the construction phase should be split into phases dependent on their potential impacts, determining the risk for each individually. Therefore, this assessment has determined the risk of the four construction categories put forward by the IAQM guidance:

- Demolition;
- Earthworks;
- Construction; and
- Track out (transport of dust and dirt onto the public road network).

The IAQM guidance framework states that the risk of dust impacts from the four categories can be defined as 'negligible', 'low risk', 'medium risk' or 'high risk' depending upon the scale and nature of the construction activity and the sensitivity and proximity of receptors to the construction site boundary. This categorisation is used to put forward appropriate mitigation measures, reducing the level of effects from the dust impacts so they are not significant.

The assessment of dust impacts using the IAQM guidance considers three separate effects from dust:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to significant increase in exposure to $PM_{10}$.

Step 1 of the assessment is set out to screen for the requirement for a more detailed assessment for the proposed development. The screening criteria states:

A 'human receptor' within:

- 250 m of the boundary of the application site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

An 'ecological receptor' within:

- 50 m of the boundary of the application site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

Where there are no receptors and the level of risk is deemed 'negligible', there is no need for further assessment.

Step 2A of the assessment enables the overall dust emission magnitude (small, medium or large) from each dust source (demolition, earthworks, construction and trackout) to be identified in relation with the criteria outlined in Table B.1.

**Table B.1: Dust emission magnitude**

| Source | Large | Medium | Small |
|---|---|---|---|
| **Demolition** | Total building volume >75,000 $m^3$, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level. | Total building volume 12,000 $m^3$ – 75,000 $m^3$, potentially dusty construction material, demolition activities 6 – 12 m above ground level. | Total building volume <12,000 $m^3$, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months. |
| **Earthworks** | Total site area >110,000 $m^2$, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height. | Total site area 18,000 $m^2$ – 110,000 $m^2$, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height. | Total site area <18,000 $m^2$, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height. |
| **Construction** | Total building volume >75,000 $m^3$, on site concrete batching, sandblasting. | Total building volume 12,000 $m^3$ – 75,000 $m^3$, potentially dusty construction material (e.g. concrete), on site concrete batching. | Total building volume <12,000 $m^3$, construction material with low potential for dust release (e.g. metal cladding or timber). |
| **Track out** | >50 HDV (>3.5t) outward movements[a] in any one day[b], potentially dusty surface material (e.g. high clay content), unpaved road length >100 m. | 20-50 HDV (>3.5t) outward movements[a] in any one day[b], moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m. | <20 HDV (>3.5t) outward movements[a] in any one day[b], surface material with low potential for dust release, unpaved road length <50 m. |

Notes:
[a] Vehicle movement is a one-way journey. i.e. from A to B, and excludes the return journey.
[b] HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

Step 2B allows for the sensitivity of the area (high, medium or low) to be assessed and takes into account 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 existing local background concentration; and
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Receptor sensitivity has been based on the highest of any criteria being met thus, the assessment is considered as robust. The sensitivity of the area is further determined for dust soiling, human health and ecosystem effects by considering the criteria presented in Table B.2.

**Table B.2: Magnitude of Receptor Sensitivity**

| Source | High | Medium | Low |
|---|---|---|---|
| **Sensitivities of people to dust soiling effects** | • Users can reasonably expect enjoyment of a high level of amenity; or<br>• The appearance, aesthetics or value of their property would be diminished by soiling; and<br>• The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.<br>• Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms. | • Users would expect[a] to enjoy a reasonable level of amenity, but would not reasonably expect[a] to enjoy the same level of amenity as in their home; or<br>• The appearance, aesthetics or value of their property could be diminished by soiling; or<br>• The people or property wouldn't reasonably be expected[a] to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.<br>• Indicative examples include parks and places of work. | • The enjoyment of amenity would not reasonably be expected[a] ; or<br>• Property would not reasonably be expected[a] to be diminished in appearance, aesthetics or value by soiling; or<br>• There is transient exposure, where the people or property would reasonably be expected[a] to be present only for limited periods of time as part of the normal pattern of use of the land.<br>• Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks[b] and roads. |
| **Sensitivities of people to health effects of $PM_{10}$** | • Locations where members of the public are exposed over a time period relevant to the air quality objective for $PM_{10}$ (in the case of the 24-hour objectives, a relevant location would be one where individuals maybe exposed for eight hours or more in a day).[c]<br>• Indicative examples include residential properties. Hospitals, schools and residential care homes should also be | • Locations where the people exposed are workers[d], and exposure is over a time period relevant to the air quality objective for $PM_{10}$ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).<br>• Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to | • Locations where human exposure is transient[e] .<br>• Indicative examples include public footpaths, playing fields, parks and shopping streets. |

| Source | High | Medium | Low |
|---|---|---|---|
| | considered as having equal sensitivity to residential areas for the purposes of this assessment. | $PM_{10}$, as protection is covered by Health and Safety at Work legislation. | |
| **Sensitivities of receptors to ecological effects** | • Locations with an international or national designation and the designated features may be affected by dust soiling; or<br>• Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain[f].<br>• Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings. | • Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or<br>• Locations with a national designation where the features may be affected by dust deposition.<br>• Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features. | • Locations with a local designation where the features may be affected by dust deposition.<br>• Indicative example is a local Nature Reserve with dust sensitive features. |

Notes:
[a] People's expectations will vary depending on the existing dust deposition in the area, see Section 4.2.
[b] Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits.
[c] This follows Defra guidance as set out in LAQM.TG(22).
[d] Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of $PM_{10}$. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivty category.
[e] There are no standards that apply to short-term exposure, e.g. one or two hours, but there is still a risk of health impacts, albeit less certain.
[f] Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

The final step, Step 2C allows for the risk of impacts to be defined. The dust emission magnitude derived in Step 2A is combined with the sensitivity of the area defined in step 2B to determine the risk of effects on:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to an increase in exposure to $PM_{10}$.

The criteria for each of the dust sources are presented in

Table B.3, Table B.4, Table B.5 and Table B.6.

**Table B.3: Demolition**

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

**Table B.4: Earthworks**

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

**Table B.5: Construction**

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

**Table B.6: Track out**

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

# Appendix C: Construction Phase Mitigation Measures

The mitigation measures set out below are from IAQM's 2024 guidance for construction dust and are appropriate for the mitigation of the risk determined. The points below can be formerly adopted into a construction dust management plan.

**Mitigation Measures:**

- Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.
- Display the head or regional office contact information.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Make a complaints log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.
- Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.
- Plan site layout: machinery and dust causing activities should be located away from receptors.
- Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.
- Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials from site as soon as possible.
- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.
- Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.
- 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 possible.
- Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes 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).
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).
- Use enclosed chutes, conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Reuse and recycle waste to reduce dust from waste materials.
- Avoid bonfires and burning of waste materials.
- 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.
- 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.
- 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 securely covered to prevent escape of materials during transport.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).