# AIR QUALITY ASSESSMENT

Proposed three-storey extension to northeast corner of existing hotel and single upward extension. New main entrance façade, exterior cladding and dressing and new fenestration to all windows. Associated works to include internal reconfiguration and repurposing to deliver rooftop restaurant and bar, new large restaurant and bar, new reception and overflow reception, seventeen additional bedrooms together with plant rooms, luggage storage and a new sub-station.

First Inn Venue Wimbledon Ltd Holiday Inn Express

200 High Street – Colliers Wood – SW19 2BH

| Control Sheet | |
|---|---|
| Site Address | Holiday Inn Express – 200 High Street Colliers Wood SW19 2BH |
| Report Ref: | **A0076** |
| Prepared by: | **Dr S Irons** |
| Issue No. | **1** |

## Summary

An air quality impact assessment has been carried out to assess both construction and operational impacts associated with the proposed development.

An assessment of the potential impacts during the construction phase has been carried out in accordance with LBM, GLA and IAQM guidance which has shown that releases of dust and $PM_{10}$ are likely to occur during site activities. The risk of dust soiling and health impacts at neighbouring properties has been assessed as low to medium. Through good site practice and the implementation of suitable mitigation measures though an AQDMP, the impact of dust and $PM_{10}$ releases will be effectively minimised, and **the residual dust impacts are expected to be negligible**.

The proposed development will not increase the number of vehicle movements associated with the Site and on this basis, there will be **no adverse impact on air quality and the proposed development is air quality neutral with respect to traffic-related emissions**.

The energy strategy is 100% electric; therefore, **the proposed development is Air Quality Neutral with respect to building-related emissions.**

A review of local air quality monitoring data and Defra mapped pollutant concentrations has been undertaken to determine whether future users of the proposed development will be exposed to poor air quality. The data indicate that concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ at the Site are well within the relevant air quality standards. Due to the expansion of the ULEZ and increased uptake of low emission vehicles, ongoing improvements in air quality are expected therefore **the proposed development will not introduce new exposure to poor air quality**.

Based on the results of the assessment, air quality is not considered a constraint to the development of the site, as proposed.

# Contents

# 1 Introduction

This assessment is to the potential air quality impacts associated with the proposed development at the Holiday Inn Express Wimbledon on High Street Collier's Wood, in the London Borough of Merton (LBM). The location of the Site is presented in Figure 1.1.

The proposed development falls within the LBM Air Quality Management Area (AQMA), a borough-wide designation due to measured and modelled exceedances of the annual mean air quality objective for nitrogen dioxide ($NO_2$) and the 24-hour mean objective for particulate matter (as $PM_{10}$). The primary source of $NO_2$ and $PM_{10}$ in the Borough is road traffic.

The scheme comprises a three-storey extension to northeast corner of the existing hotel and single upward extension. New main entrance façade, exterior cladding and dressing and new fenestration to all windows. Associated works to include internal reconfiguration and repurposing to deliver rooftop restaurant and bar, new large restaurant and bar, new reception and overflow reception, seventeen additional bedrooms together with plant rooms, luggage storage and a new sub-station. The existing and proposed ground-floor layouts are presented in Figure 1.2 and Figure 1.3, respectively.

The potential impact of the proposed development on local air quality during the construction and operational phases has been assessed. The type, source and significance of potential impacts are identified and the measures that should be employed to minimise these impacts are described. In addition, a review of local air quality monitoring data has been undertaken to determine whether mitigation will be required to protect future occupants from poor air quality.

Figure 1.1: Location of the Proposed Development Site

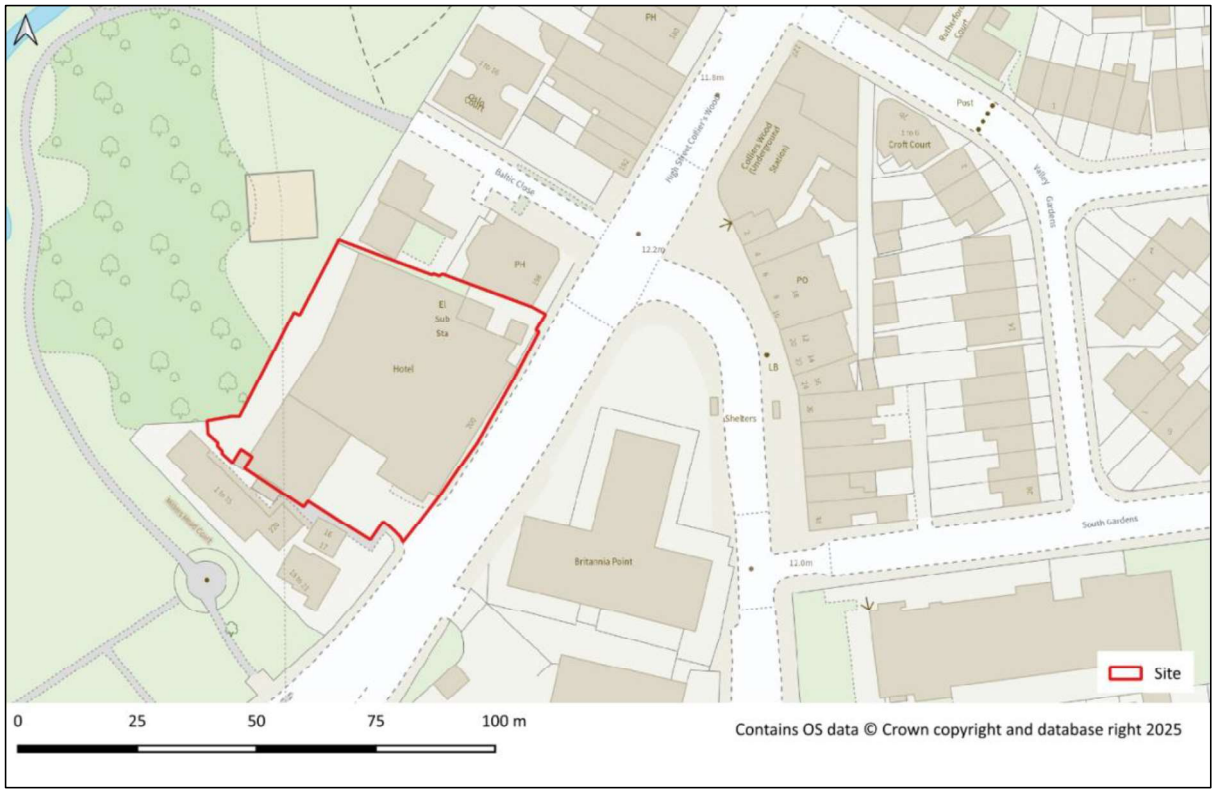


Figure 1.2: Existing Ground-Floor Layout

Figure 1.3: Proposed Ground-Floor Layout

# 2 Policy Context

## 2.1 National Legislation

### 2.1.1. Air Quality Standards and Objectives

The assessment of potential air quality impacts associated with the proposed development has been evaluated with respect to the current air quality standards and objectives for the protection of human health, as set out in the Air Quality Regulations 2010[1] and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020[2].

In the context of the proposed development, the pollutants of concern are nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$ and $PM_{2.5}$), which in an urban environment are primarily associated with road traffic emissions.

It is widely accepted that there is no safe level for $PM_{2.5}$ and on this basis The Environment Act (2021) required the Air Quality Regulations to be updated to include a more stringent long-term air quality target. On 31st January 2023, the Government published an Environmental Improvement Plan[3], which includes an Annual Mean Concentration Target (AMCT) of 10 µg/m$^3$, to be achieved by the end of 2040. The Plan also includes an interim target of 12 µg/m$^3$, to be achieved by the end of January 2028. The 10 µg/m$^3$ target for $PM_{2.5}$ has been adopted into UK law via the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[4].

A summary of the air quality standards for $NO_2$, $PM_{10}$ and $PM_{2.5}$, that are applicable in England, are presented in Table 2.1.

[1] The Air Quality Standards Regulations 2010, Statutory Instrument 2010 No. 1001
[2] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020, Statutory Instrument 2020 No. 000
[3] Environmental Improvement Plan 2023, Defra, January 2023
[4] Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, Statutory Instrument 2023 No. 96

Table 2.1: Air Quality Standards for $NO_2$, $PM_{10}$ and $PM_{2.5}$

| Pollutant | Concentration measured as | Objective | Date by which limit value is to be met (and maintained thereafter) |
|---|---|---|---|
| $NO_2$ | 1-hour mean | 200 µg/m$^3$, not to be exceeded more than 18 times per calendar year (a) | 31st December 2005 |
| | Annual mean | 40 µg/m$^3$ | 31st December 2005 |
| $PM_{10}$ | 24-hour mean | 50 µg/m$^3$, not to be exceeded more than 35 times per calendar year (b) | 31st December 2004 |
| | Annual mean | 40 µg/m$^3$ | 31st December 2004 |
| $PM_{2.5}$ | Annual mean | 20 µg/m$^3$ | 1st January 2020 |
| | Annual mean | 12 µg/m$^3$ (interim target) | 31st January 2028 |
| | Annual mean | 10 µg/m$^3$ (target) | 31st December 2040 |

(a) Equivalent to the 99.8th Percentile of Hourly Means.
(b) Equivalent to the 90.4th Percentile of 24-Hour Means.

### 2.1.2. Local Air Quality Management

The framework for local air quality management (LAQM) in the UK was introduced by the Environment Act 1995[5]. Local Authorities are required to regularly review and assess air quality to establish whether there are any locations where pollutant concentrations exceed the relevant air quality objectives or limit values. Where an exceedance is identified, the local authority is obliged to declare an AQMA prepare an Air Quality Action Plan (AQAP) setting out measures to improve air quality and achieve compliance with the objective(s). The LAQM delivery framework for local authorities in England is set out in Defra's 2023 Air Quality Strategy[6].

The core guidance document for use by persons involved in LAQM or considering the impacts of a development with the potential to affect air quality as covered by LAQM, is the LAQM Technical Guidance LAQM.TG22[7].

### 2.1.3. The National Planning Policy Framework

The National Planning Policy Framework NPPF[8] sets out the Government's policies for planning and how these should be applied. With regard to air quality, the NPPF 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*

[5] Part IV of the Environment Act 1995.
[6] Air Quality Strategy Framework for local authority delivery, Defra, April 2023
[7] Local Air Quality Management Technical Guidance (TG22), August 2022
[8] Department for Communities and Local Government, National Planning Policy Framework, December 2024

*new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan*.

### 2.1.4. The Planning Practice Guidance

8.11 The Planning Practice Guidance (PPG)[9], outlines the principles upon which the planning process can take account of air quality impacts associated with new developments. It outlines the role of Local Plans in promoting sustainability and providing limitations on development in areas of poor air quality. An emphasis is placed on consultation with the planning authority to determine whether there are any local issues with the potential to affect the scope of an air quality assessment. Typical air quality mitigation measures are outlined highlighting the use of planning conditions and funding obligations to off-set any significant impacts.

## 2.2 Regional Policy

### 2.2.1. The London Plan

Policy SI1 (Improving Air Quality) of the London Plan[10] sets out the Greater London Authority's (GLA) commitment to improving air quality and public health and 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.*

*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.*

[9] Ministry of Housing, Communities & Local Government, Planning Practice Guidance: Air Quality, November 2019.
[10] The London Plan 2021, The Spatial Development Strategy for Greater London, Greater London Authority, March 2021.

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, which do not demonstrate that design measures have been used to minimise exposure should be refused.*

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

*1. How proposals have considered ways to maximise benefits to local air quality, and*

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

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

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

### 2.2.2. London Environment Strategy

Chapter 4 of the London Environment Strategy[11] outlines the Greater London Authority's (GLA) commitment to improving air quality in London. The strategy aims plan to significantly reduce $NO_2$ and particulate ($PM_{10}$, $PM_{2.5}$ and black carbon) concentrations through a number of key objectives and policies:

*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.*

[11] London Environment Strategy, GLA, May 2018

*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.*

With regard to Policy 4.3.1, the Mayor of London has set a target for compliance with the now superseded WHO guideline value[12] for $PM_{2.5}$ of 10 µg/m$^3$ by 2030. However, modelling[13] suggests that due to the transboundary nature of $PM_{2.5}$, compliance in London is unlikely to be achieved without additional measures at national, European and international level.

[12] Air Quality Guidelines Global Update 2005, World Health Organisation

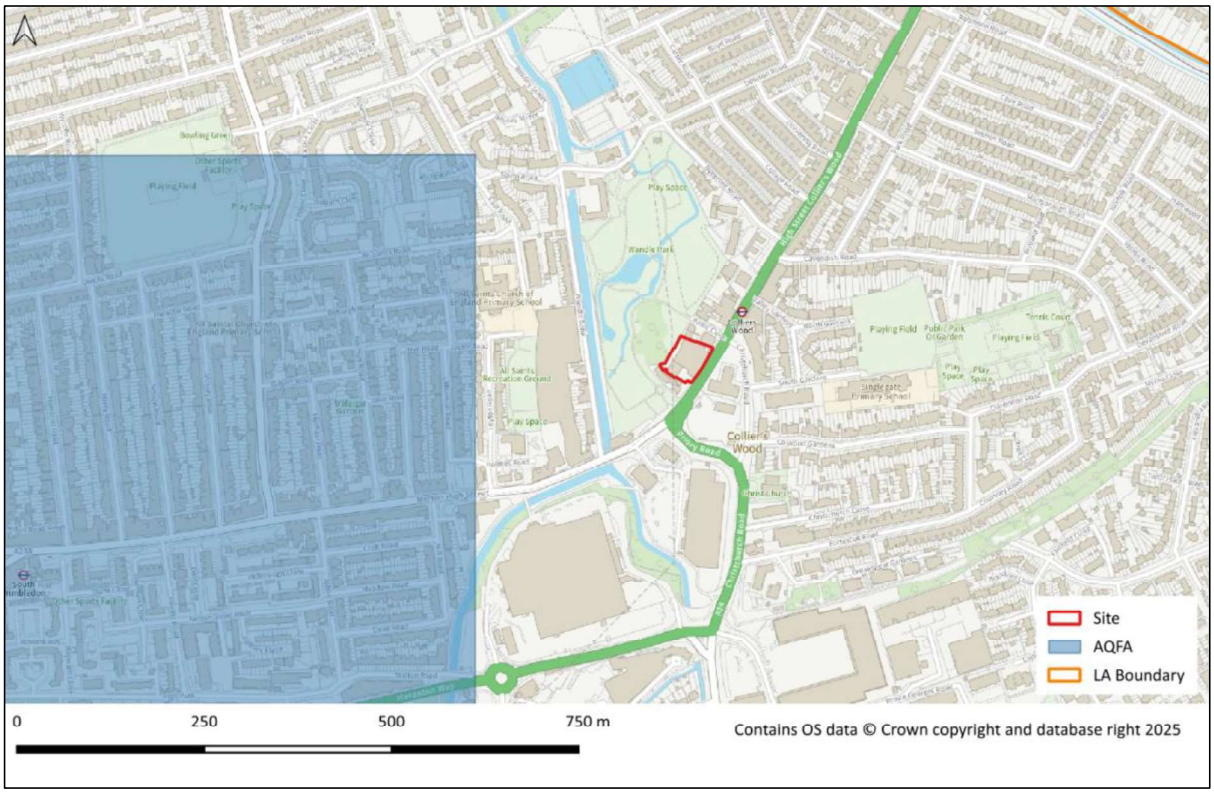
[13] $PM_{2.5}$ in London: Roadmap to meeting World Health Organization guidelines by 2030, GLA, October 2019

### 2.2.3. Greater London Authority Air Quality Focus Areas

Air Quality Focus Areas (AQFA) have been identified by the GLA where there is high human exposure in locations where the annual mean air quality objective for $NO_2$ is exceeded. The purpose of the Focus Areas is to allow local authorities to target actions to improve air quality where it is most needed and to inform the planning process with regard to the air quality impact of new developments.

The proposed development is located 250m west of AQFA 113 'Wimbledon The Broadway/Merton Road/Morden Road/Kingston Road' (see Figure 2.1).

Figure 2.1: Location of Development Relative to Air Quality Focus Area




## 2.3 Local Policy

### 2.3.1. Merton Local Plan

The Local Plan for Merton[14] was adopted in November 2024 and includes Policy P15.10 'Air Quality, Pollution and Land Stability' which states:

*1. Merton Council will ensure that local environmental impacts of all development proposals do not lead to detrimental effects on the health, safety and the amenity of existing and new users or occupiers of the development site, or the surrounding land. These potential impacts can include, but are not limited to, air pollution, water pollution, noise and vibration, light pollution, odours and fumes, solar glare and solar dazzle as well as land contamination.*

[14] Merton Local Plan 2024 – 2037/38, London Borough of Merton, November 2024

*2. Several policies in the Local Plan contribute to reducing and/or mitigating the impacts of air pollution such as transport, green infrastructure, design and climate change policies. Developers must have regard to any guidance provided by Merton Council on local environmental impacts and pollution as well as on noise generating and noise sensitive development. Where necessary, we will set planning conditions to reduce and mitigate pollutant impacts. Appropriate site investigations and reports on pollution, contamination, and land stability, prepared by a competent and accredited professional, must be made available and submitted to the Local Planning Authority to inform the assessments set out in this policy.*

*3. The design and layout of new development must endeavour to minimise conflict between different land uses, taking account of users and occupiers of new and existing developments. Any noise and polluting activities or features such a plant equipment should be located away from areas of high pollution and sensitive land uses (such as schools, nurseries, play spaces, hospitals and residential dwellings) where possible to ensure that there are no detrimental impacts on living conditions, health and wellbeing or amenity.*

*4. Where there are, already significant adverse effects on the environment or amenity due to pollution, sensitive uses should be steered away from such areas. However, given the limited availability of land for development in the borough, this will not always be possible. Therefore, new developments, including changes of use, should mitigate and reduce any adverse impacts resulting from air and light pollution, noise, vibration and dust to acceptable levels.*

*5. Major developments in Merton and development briefs for large-scale development subject to an Environmental Impact Assessment (EIA) must achieve Air Quality Positive Approach status.*

*6. All developments must be at least Air Quality Neutral and resist development proposals, which would materially increase exceedances of local air pollutants and have an unacceptable impact on amenity or health, unless the development mitigates this impact through physical measures and/or financial contributions to implement proposals in Merton's Local Air Quality Management Plan.*

*7. Residential development proposals and change of use to residential at street level, will need to submit an Air Quality Impact Assessment in areas of poor air quality.*

*8. Development proposals must consider the impact of air quality. An Air Quality Impact Assessment will be required for proposals in areas already subject to poor air, Major Developments, developments involving biomass boilers, biomass or gas CHP (including connections to existing networks where the increased capacity is not already covered in an existing AQA), substantial earthworks or demolition and any development that could have a significant impact on air quality, either directly or indirectly. The following will be needed:*

a. *An Air Quality Impact Assessment, including where necessary, modelled data.*
b. *Mitigation measures to reduce the development's impact upon air quality including the type of equipment installed, thermal insulation and ducting abatement technology.*
c. *Measures installed in the new development to protect the occupiers of new developments from existing sources of pollution.*

d. *Mitigation for developments to be used by sensitive receptors such as schools, hospitals, care homes, areas of deprivation and in areas of existing poor air quality; this also applies to proposals close to developments used by sensitive receptors.*
e. *The use of green infrastructure, including trees and hedgerows to reduce the exposure to air pollution to absorb dust and other pollutants.*

*9. Development proposals will be expected to demonstrate how they will minimise air pollution associated with the transport requirements including delivery, servicing and construction vehicles.*

*10. All decentralised energy schemes will be expected to demonstrate that they can be used without having an unacceptable impact on air quality. Where this is not possible, CHP systems will not be prioritised over other air quality neutral technologies.*

*11. We will seek financial contributions using Planning Obligations towards air quality measures where a proposed development is not air quality neutral, or mitigation measures do not reduce the impact upon poor air quality. In determining the contribution, the council will have regard to the London Plan Air Quality Neutral guidance (section 5).*

# 3 Methodology

## 3.1 Scope

The scope of the assessment is as follows:

- A review of local air quality monitoring data and Defra background pollutant maps to determine the existing baseline at the site.
- An assessment of potential construction phase impacts, including construction traffic emissions, dust generated by on-site activities and re-suspended dust from HGV movements on the local road network (trackout).
- An assessment of potential operational phase impacts, including traffic generated by the proposed development and building-related emissions.
- An assessment of potential exposure of future occupants to poor air quality.
- An air quality neutral assessment.
- Construction and operational phase mitigation measures.

Details of the assessment methodology are provided below.

## 3.2 Construction Dust

The potential impact of dust generated during site enabling, earthworks and construction works at the proposed development has been undertaken in accordance with the LBM's Code of Practice for Construction Sites[15], the GLA's Control of Dust and Emissions during Construction and Demolition SPG[16] and the latest Institute of Air Quality Management (IAQM) construction dust guidance[17].

A detailed assessment of dust impacts is required where there are human receptors within:

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

For ecological receptors, the screening criteria are:

[15] Code of Practice for Construction Site, London Borough of Merton, March 2017
[16] The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, GLA, July 2014
[17] Guidance on the assessment of dust from demolition and construction, IAQM, v2.2 January 2024

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

A full description of the construction dust risk assessment methodology is provided in Appendix A. The methodology allows the potential risk of dust soiling and human health effects to be determined, based on the sensitivity of nearby receptors (human and ecological) and the anticipated magnitude of the dust emission due to:

- demolition;
- earthworks;
- construction; and
- trackout[18].

The assessment of dust risk is also based on professional judgement taking into account factors such as the prevailing wind direction, the proposed construction phasing, the likely duration of dust raising activities, local topography and existing air quality.

A range of best practice mitigation measures are provided within the guidance, which are dependent on the level of dust risk attributed to the site. The measures should be incorporated into an Air Quality and Dust Management Plan (AQDMP) for the proposed development and approved by the LBM prior to the commencement of works on site.

The significance of the residual impacts following appropriate mitigation is determined by professional judgement.

## 3.3 Construction Traffic

The Environmental Protection UK (EPUK)/ IAQM planning guidance[19], states that for developments that are close to or within an AQMA, a detailed assessment of traffic-related impacts is required where:

- There is an increase in the annual average daily traffic (AADT) flow of light goods vehicles (LGV) of more than 100 vehicles; and/or
- There is an increase in the AADT flow of heavy goods vehicles (HGV) of more than 25 vehicles; and/or

[18] Re-suspended dust from HGV movements

[19] Land-use Planning and Development Control: Planning for Air Quality, Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land use planning and development control process, v1.2 January 2017

- There is a change in the road re-alignment by more than 5m; and/or
- A new junction is introduced, which will significantly alter vehicle speeds.

In the context of these criteria, LGV and HGV refer to vehicles below and above 3.5 tonnes, respectively.

Based on the scale of the proposed works, the construction phase trip generation is expected to be minimal and well below the above thresholds. The impact of vehicular emissions of $NO_2$, $PM_{10}$ and $PM_{2.5}$ from construction traffic is therefore anticipated to be negligible.

## 3.4 Operational Traffic

The hotel is in a highly sustainable location near Colliers Wood Station. No additional parking is proposed and therefore no increase in vehicle trips is anticipated.

## 3.5 Exposure Assessment

A review of local air quality monitoring data has been undertaken to determine whether occupants of the proposed development will be exposed to pollutant concentrations above the air quality standards for the protection of health.

The London Councils Air Quality Planning Guidance[20] provides criteria for determining the significance of exposure to air pollution and level of mitigation required. The Air Pollution Exposure Criteria (APEC) are presented in Table 3.1. The applicable ranges assume a downward trend in pollutant concentrations has been established, which is anticipated due to and the expansion of the Ultra-Low Emission Zone (ULEZ) and the ongoing uptake of lower emission vehicles.

[20] London Councils Air Quality and Planning Guidance, January 2007

Table 3.1: Air Pollution Exposure Criteria

| Category | Applicable Range Annual Mean $NO_2$ | Applicable Range $PM_{10}$ | Recommendation |
|---|---|---|---|
| **APEC-A** | > 5% below national objective | **Annual Mean:** > 5% below national objective **24 hr Mean:** > 1-day less than national objective | No air quality grounds for refusal; however, mitigation of any emissions should be considered. |
| **APEC-B** | Between 5% below or above national objective | **Annual Mean:** Between 5% above or below national objective **24-hr Mean:** Between 1-day above or below national objective | May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered, and internal pollutant emissions minimised. |
| **APEC-C** | > 5% below national objective | **Annual Mean:** > 5% above national objective **24-hr Mean:** > 1-day more than national objective | Refusal on air quality grounds should be anticipated, unless the Local Authority has a specific policy enabling such land use and ensures best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures. |

## 3.6 Building-Related Emissions

The energy strategy for the proposed development is 100% electric (ASHP) and therefore there will be no adverse impact on local air quality.

# 4 Baseline Air Quality and Exposure Assessment

## 4.1 Local Monitoring Data

Ambient air quality is measured in London using a combination of automatic air quality monitoring stations and passive $NO_2$ diffusion tubes. In addition, Breathe London[21] operates a network of low-cost sensors measuring $NO_2$ and $PM_{2.5}$ concentrations across the capital.

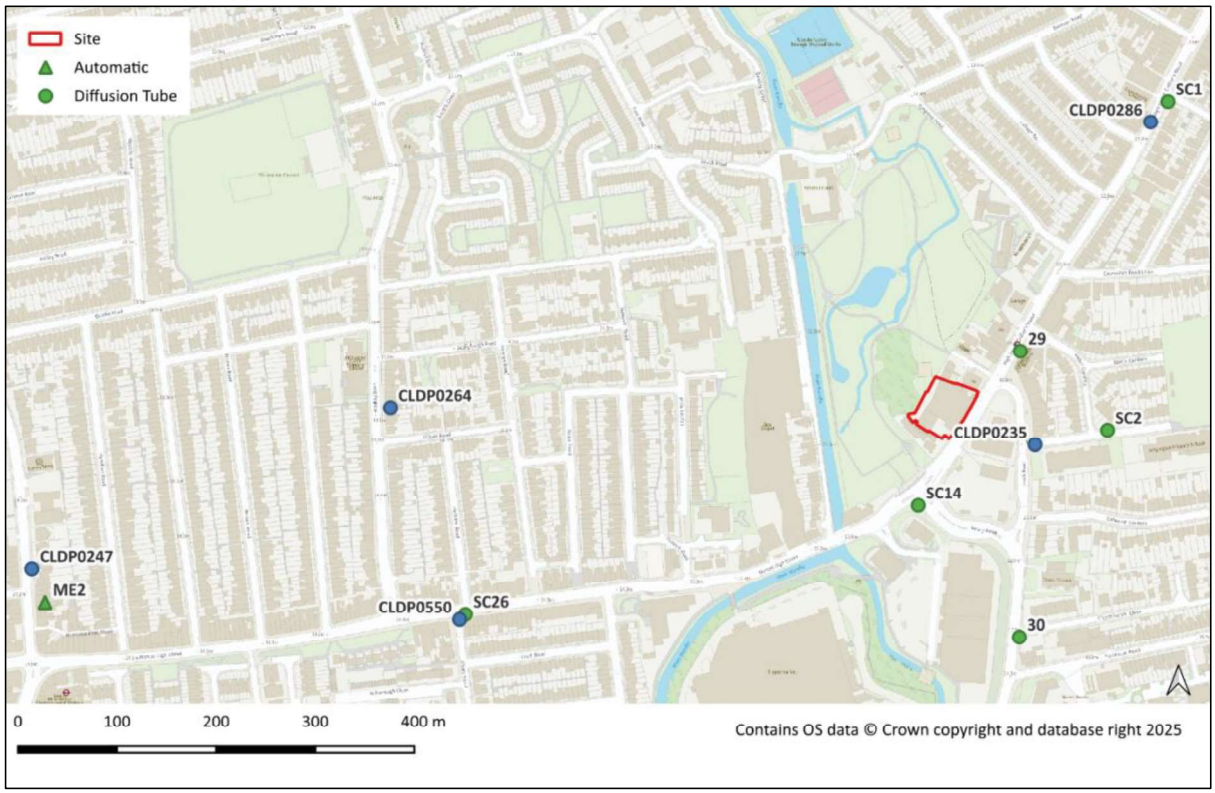
Details of the monitoring sites considered relevant to the assessment are provided in Table 4.1. The monitoring locations are shown in Figure 4.1.

Table 4.1: Local Monitoring Sites (µg/m$^3$)

| Site ID | Location | Type | Easting | Northing | Pollutants Monitored |
|---|---|---|---|---|---|
| *Automatic* | | | | | |
| ME2 | Merton Road, South Wimbledon | Roadside | 525808 | 170122 | $PM_{10}$ |
| *Diffusion Tube* | | | | | |
| 29 | Colliers Wood Station | Kerbside | 526927 | 170654 | $NO_2$ |
| 30 | Christchurch Road | Kerbside | 526791 | 170087 | $NO_2$ |
| SC1 | Marlborough Road/High Street | Kerbside | 526941 | 170628 | $NO_2$ |
| SC2 | South Gardens/Singlegate School | Kerbside | 526880 | 170296 | $NO_2$ |
| SC14 | Christchurch Road/Burger King | Kerbside | 526689 | 170220 | $NO_2$ |
| SC26 | Merton High Street/Abbey Rd | Kerbside | 526232 | 170110 | $NO_2$ |
| *Breathe London* | | | | | |
| CLDP0235 | South Gardens | Roadside | 526809 | 170281 | $NO_2$, $PM_{2.5}$ |
| CLDP0247 | Merton Road | Roadside | 525796 | 170156 | $NO_2$, $PM_{2.5}$ |
| CLDP0264 | Haydons Road | Roadside | 526158 | 170319 | $NO_2$, $PM_{2.5}$ |
| CLDP0286 | 80-82 High Street, Colliers Wood | Roadside | 526925 | 170607 | $NO_2$, $PM_{2.5}$ |
| CLDP0550 | Abbey Road | Roadside | 526228 | 170105 | $NO_2$, $PM_{2.5}$ |

[21] https://www.breathelondon.org/

Figure 4.1: Monitoring Site Locations




Annual mean $NO_2$ concentrations measured by diffusion tube between 2019 and 2023 are summarised in 4.2. Exceedances of the objective are highlighted in bold. The data have been obtained from LBM's most recent annual air quality status report[22].

Table 4.2: Annual Mean $NO_2$ Concentrations Measured by Diffusion Tube (µg/m$^3$)

| Site ID | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| 29 | **60.3** | **45.1** | **46** | **41** | 37.3 |
| 30 | **51.0** | 34.9 | 36 | 33 | 31.2 |
| SC1 | - | - | - | 33 | 36.7 |
| SC2 | - | - | - | 17 | 18.4 |
| SC14 | - | - | - | 30 | 34.3 |
| SC26 | - | - | - | - | **49.8** (a) |

(a) Poor Data capture (<50%)

The data show that there was a significant drop in $NO_2$ concentrations in 2020 due to reductions in traffic associated with the Covid-19 pandemic lockdown measures. Whilst traffic-levels have partially recovered in the borough, annual mean $NO_2$ concentrations have remained well below pre-pandemic

[22] London Borough of Merton Air Quality Annual Status Report for 2023, June 2024

level. With the recent expansion of the ULEZ to the M25 and the ongoing uptake of electric vehicles, it is unlikely that $NO_2$ concentrations will return to pre-pandemic level.

Diffusion tubes are not able to measure short-term $NO_2$ concentrations, however measurements across the UK[23] have shown that an exceedance of the 1-hour objective is unlikely where the annual mean concentration is less than 60 µg/m$^3$. The concentrations measured at all the diffusion tube locations have been well below this level since 2020 and therefore it is very unlikely that the short-term objective is being exceeded in the area.

Roadside $PM_{10}$ concentrations measured by automatic monitor ME2 on Merton Road (approximately 900m west of the proposed development) are presented in Table 4.3. The annual mean concentrations were comparatively unaffected by the reduction in traffic in 2020. Both the annual means and number of short-term exceedances are well within the air quality objectives.

Table 4.3: $PM_{10}$ Concentrations Measured by Automatic Monitor ME2 (µg/m$^3$)

| Statistic | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Annual Mean $PM_{10}$ Concentrations (µg/m$^3$) | 28 | 26 | 23 (a) | 26 (a) | - |
| Number of $PM_{10}$ 24-Hour Means > 50 µg/m$^3$ | 20 | 11 | 8 (a) | 6 (a) | - |
| (a) Data capture < 85% | | | | | |

Annual mean $PM_{2.5}$ concentrations measured by the Breathe London network are presented in Table 4.4. The measurements are calibrated using data from the London Air Quality Network[24], however the sensors do not meet Defra's minimum performance requirements[25] and therefore the concentrations are considered indicative. Nevertheless, the Breathe London data suggest that roadside $PM_{2.5}$ concentrations in the area are well within the current air quality standard of 20 µg/m$^3$ and may also be compliant with the Government's 2040 concentration target of 10 µg/m$^3$.

Table 4.4: Annual Mean $PM_{2.5}$ Concentrations Measured by Beathe London Nodes (µg/m$^3$)

| Site ID | 2022 | 2023 | 2024 |
|---|---|---|---|
| CLDP0235 | 12 | - | - |
| CLDP0247 | 12 | 9.9 | |
| CLDP0264 | 12 | - | |
| CLDP0286 | 11 | - | |
| CLDP0550 | - | - | 7.4 |

[23] D Laxen and B Marner: Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites, July 2003.
[24] https://www.londonair.org.uk/
[25] https://uk-air.defra.gov.uk/networks/monitoring-methods?view=eu-standards

## 4.2 Potential Exposure

The proposed development is a hotel, therefore there will be no long-term exposure on-Site. Consequently, the assessment of potential exposure focuses on the potential for an exceedance of the short-term air quality objectives for $NO_2$ and $PM_{10}$.

A review of the National Atmospheric Emission Inventory (NAEI) Point Source Database[26] indicates that there are no local industrial or commercial emissions sources in the area that are likely to significantly affect air quality at the Site. Air quality at the proposed development is therefore likely to be primarily influenced by emissions from traffic on the local road network.

The new façade of the hotel will be approximately 2m from the kerb of High Street Colliers Wood and the proposed layout includes new bedrooms on the ground-floor roadside façade. The local monitoring data indicates that annual mean $NO_2$ concentrations at kerbside locations in the area are well below the 60 µg/m$^3$ threshold for a potential exceedance of the 1-hour mean objective. Similarly, the data from automatic site ME2 indicates that the number of 24-hour mean $PM_{10}$ concentrations above the 50 µg/m$^3$ limit has been well below the 35 allowable within the objective over the past five-years. On this basis the proposed development is considered to fall within exposure category APEC-A.

[26] https://naei.energysecurity.gov.uk/data/maps/emissions-point-sources

# 5 Construction Dust Impacts

## 5.1 Sensitivity of the Area

The assessment of dust impacts is dependent on the proximity of the most sensitive receptors to the construction area and existing $PM_{10}$ concentrations (i.e., the potential for additional dust to result in an exceedance of the short or long-term air quality objectives).

The precise behaviour of the dust, its residence time in the atmosphere and the distance it may travel before being deposited will depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

The area around the Site that has the potential to be affected by dust generated during the construction phase is shown in Figure 5.1. The area is predominantly residential, and it is estimated that there are 30 – 40 existing dwellings within 20m of the Site. The sensitivity of the area to dust soiling impacts during demolition, earthworks and construction is therefore *high*.

Figure 5.1: Dust Buffers

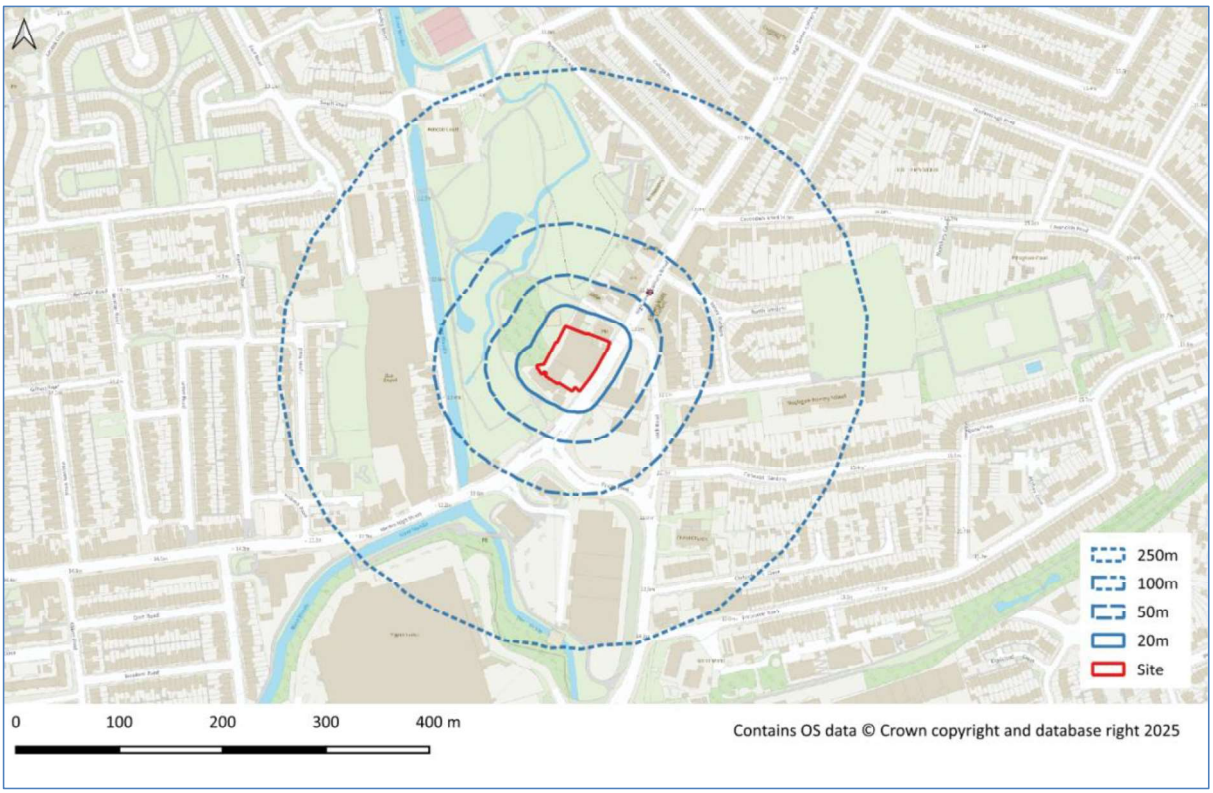
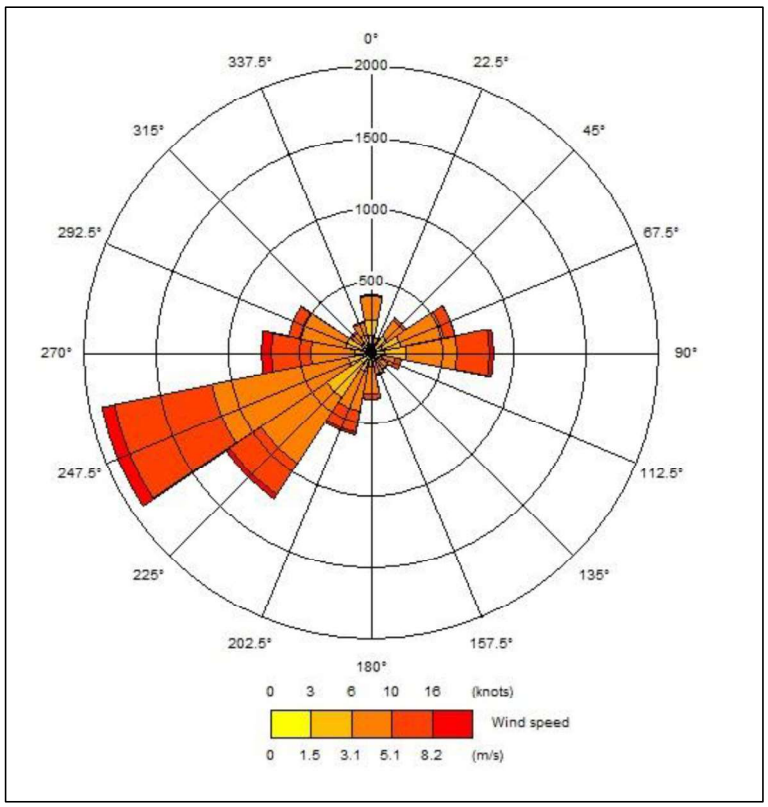


Figure 5.2: Wind Rose London City Airport 2023




Based on the $PM_{10}$ concentrations measured by the roadside automatic monitor on Merton Road (see Table 4.3), existing $PM_{10}$ concentrations in the area are considered to be in the range 24 - 28 µg/m$^3$. The sensitivity of the area to human health impacts during demolition, earthworks and construction is therefore *high*.

Construction traffic will access the Site via the A24 High Street, where there are residential dwellings within 6-8m of the carriageway. On this basis, the sensitivity of the area to dust soiling and human health impacts from trackout is also *high*.

There are no dust sensitive habitat sites within 50m of the Site; therefore, impacts on ecology have been scoped out of the assessment.

A summary of the area sensitivity to dust and human health impacts is presented in Table 5.1.

Table 5.1: Sensitivity of the Area to Dust Impacts

| | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust Soiling** | **High** | **High** | **High** | **High** |
| **Human Health** | **High** | **High** | **High** | **High** |

## 5.2 Dust Emission Magnitude

The magnitude of the likely dust emission from demolition, earthworks, construction and trackout is presented in Table 5.2.

Table 5.2: Evaluation of Dust Emission Magnitude

| Source | Proposed Works | Dust Emission Magnitude |
|---|---|---|
| **Demolition** | The majority of the external demolition works will be undertaken at ground-floor level. The demolition materials will include masonry and render which have the potential to generate dust, however the scale of the works is small (306 $m^3$) and on-site crushing and screening will not be undertaken. | **Small** |
| **Earthworks** | The earthworks area is less than 500$m^2$ and there is unlikely to be more than 1 earth moving vehicle on site at any one time. Stockpiling of dusty material is unlikely. British Geological Survey (BGS) mapping[27] indicates that the area is underlain by bedrock from the London Clay Formation with superficial deposits of alluvium (clay, silt, sand and gravel). The UK Soil Observatory (UKSO)[28] confirms a layered subsoil of clay, sand and silt. The soil type is therefore considered to be moderately dusty. | **Small** |
| **Construction** | The total construction volume is 1,197 $m^3$. Building materials will include concrete, however batching will not be undertaken onsite. | **Small** |
| **Trackout** | Based on the proposed works, less than 5 outward HGV trips are anticipated on any one day. Road-going vehicles are unlikely to travel over unmade ground. | **Small** |

## 5.3 Risk of Dust Impacts Prior to Mitigation

A summary of the potential risk of dust impacts, based on the high sensitivity of the local area to human health impacts and dust soiling impacts, is presented in Table 5.3.

Recommended dust mitigation measures, based on the assessed risk, are presented in Section 6.

Table 5.3: Risk of Dust Impacts Prior to Mitigation

| | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust Soiling** | **Medium** | **Low** | **Low** | **Low** |
| **Human Health** | **Medium** | **Low** | **Low** | **Low** |

[27] https://geologyviewer.bgs.ac.uk/
[28] https://mapapps2.bgs.ac.uk/ukso/home.html

# 6 Mitigation

## 6.1 Construction Phase

The risk of dust soiling and human health impacts from the site has been assessed as *medium* during the demolition works and *low* from earthworks, construction and trackout, prior to mitigation.

In accordance with the IAQM guidance, an Air Quality and Dust Management Plan (AQDMP) should be developed and implemented on site to ensure that the construction activities do not give rise to exceedances of the air quality objectives for $PM_{10}$/$PM_{2.5}$ or dust nuisance at nearby sensitive receptors.

The mitigation measures detailed in Table 6.1 should be included be included in the AQDMP. It is recommended that the AQDMP is reviewed regularly, in consultation with site management, to ensure that there are no significant changes to the construction methods or proposed works.

The significance of dust impacts on nearby receptors following the implementation of appropriate and best practice mitigation is expected to be negligible.

Table 6.1: Highly Recommended (H) and Desirable (D) Mitigation Measures

| Area | Measure | H | D |
|---|---|---|---|
| Communications | Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. | ✓ | |
| | Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. | ✓ | |
| | Display the head or regional office contact information. | ✓ | |
| Site Management | Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. | ✓ | |
| | Make a complaints log available to the local authority when asked. | ✓ | |
| | Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book. | ✓ | |
| Monitoring | Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of the site boundary, with cleaning to be provided if necessary. | | ✓ |

| Area | Measure | H | D |
|---|---|---|---|
| | Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. | ✓ | |
| | 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. | ✓ | |
| | Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site. | ✓ | |
| Preparing and maintaining the site | 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 enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. | ✓ | |
| | Avoid site runoff of water or mud. | ✓ | |
| | Keep site fencing, barriers and scaffolding clean using wet methods. | ✓ | |
| | Remove materials that have the 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 | ✓ | |
| Operating vehicle/ machinery and sustainable travel | Ensure all non-road mobile machinery (NRMM) comply with the correct standards. | ✓ | |
| | 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. All necessary precautions should be taken to prevent smoke emissions or fumes from plant or stored fuel oils. In particular, measures should be taken to ensure that all plant is well maintained and not left running for long periods when not in use. | ✓ | |
| | Implement a Travel Plan that supports and encourages sustainable 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. | ✓ | |

| Area | Measure | H | D |
|---|---|---|---|
| | Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled 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 | Avoid bonfires and burning of waste materials. | ✓ | |
| 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). | | ✓ |
| | Fully screen, if practicable, the building or structure to be demolished with debris screens or sheets. | ✓ | |
| | Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. | ✓ | |
| | Avoid explosive blasting, using appropriate manual or mechanical alternatives. | ✓ | |
| | Bag and remove any biological debris or damp down such material before demolition. | ✓ | |
| 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 | | ✓ |
| Trackout | Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. | ✓ | |
| | Avoid dry sweeping of large areas. | | ✓ |
| | Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. | ✓ | |
| | Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). | | ✓ |

## 6.2 Operational Phase

The review of local air quality monitoring data indicates that pollutant concentrations at the Site are well within the relevant air quality standards and objectives for the protection of health. Ongoing improvements to air quality are expected, therefore future pollutant concentrations at the Site are anticipated to remain within the objectives. On this basis, the proposed development will not introduce new exposure to poor air quality, however an MVHR system is proposed which will minimise the ingress of pollutants into the building.

# 7 Air Quality Neutral Assessment

An air quality neutral assessment has been undertaken in accordance with the London Plan Air Quality Neutral Guidance[29].

Benchmarks have been developed for buildings and transport-related emissions, which are dependent on the location of the site and the proposed land-use. Developers are required to calculate building-related emissions, and the annual trip generation associated with the development for comparison with the benchmarks. Where the benchmarks are exceeded, damage costs associated with the excess emissions are calculated, which may be offset through appropriate mitigation measures or a financial contribution.

The guidance states that "*Developments, including major developments, that do not include additional emissions sources are assumed to be Air Quality Neutral and to meet the Air Quality Neutral benchmarks*." These include developments with:

- no additional parking spaces.
- no increase in private vehicle trips; and
- no new combustion plant (e.g., gas boilers).

## 7.1 Transport Emissions

No additional parking is proposed and therefore no change in trips is expected. The proposed development is therefore Air Quality Neutral with respect to transport emissions.

## 7.2 Building Emissions

The energy strategy is 100% electric and therefore the proposed development is Air Quality Neutral with respect to building emissions.

[29] London Plan Guidance Air Quality Neutral, GLA, February 2023

# 8 Summary and Conclusions

An air quality impact assessment has been carried out to assess both construction and operational impacts associated with the proposed development.

An assessment of the potential impacts during the construction phase has been carried out in accordance with LBM, GLA and IAQM guidance which has shown that releases of dust and $PM_{10}$ are likely to occur during site activities. The risk of dust soiling and health impacts at neighbouring properties has been assessed as low to medium. Through good site practice and the implementation of suitable mitigation measures though an AQDMP, the impact of dust and $PM_{10}$ releases will be effectively minimised, and **the residual dust impacts are expected to be negligible**.

The proposed development will not increase the number of vehicle movements associated with the Site and on this basis, there will be **no adverse impact on air quality and the proposed development is air quality neutral with respect to traffic-related emissions**.

The energy strategy is 100% electric; therefore, **the proposed development is Air Quality Neutral with respect to building-related emissions.**

A review of local air quality monitoring data and Defra mapped pollutant concentrations has been undertaken to determine whether future users of the proposed development will be exposed to poor air quality. The data indicate that concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ at the Site are well within the relevant air quality standards. Due to the expansion of the ULEZ and increased uptake of low emission vehicles, ongoing improvements in air quality are expected therefore **the proposed development will not introduce new exposure to poor air quality**.

Based on the results of the assessment, air quality is not considered a constraint to the development of the site, as proposed.

# Appendix A – Construction Dust Risk Assessment Methodology

Factors defining the sensitivity of a receptor to dust impacts are presented in Table A1.

Table A1: Receptor Sensitivity

| **Human Health** | |
|---|---|
| **High** | • 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 may be exposed for eight hours or more in a day) (a).<br>• Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment. |
| **Medium** | • Locations where the people exposed are workers (b), 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 $PM_{10}$, as protection is covered by Health and Safety at Work legislation. |
| **Low** | • Locations where human exposure is transient (c)<br>• Indicative examples include public footpaths, playing fields, parks and shopping streets. |
| **Dust Soiling** | |
| **High** | • Users can reasonably expect (d) 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. |
| **Medium** | • Users would expect (d) to enjoy a reasonable level of amenity, but would not reasonably expect (d) 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 (d) 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. |

| | |
|---|---|
| **Low** | • The enjoyment of amenity would not reasonably be expected (d); or<br>• property would not reasonably be expected (d) 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 (d) 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 (e) and roads. |
| **Ecological** | |
| **High** | • 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 (g).<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. |
| **Medium** | • 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. |
| **Low** | • 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. |

(a) This follows Defra guidance as set out in LAQM.TG22.
(b) 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 sensitivity category.
(c) 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.
(d) People's expectations will vary depending on the existing dust deposition in the area.
(e) 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 workplace 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.
(f) The advice of an ecologist should be sought to determine the need for an assessment of dust impacts on sensitive habitats and plants. A Habitat Regulation Assessment of the site may be required as part of the planning process, if the site lies close to an internationally designated site i.e., Special Conservation Areas (SACs), Special Protection Areas (SPAs) designated under the Habitats Directive (92/43/EEC) and RAMSAR sites.
(g) Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

The sensitivity of the area as a whole is dependent on the number of receptors within each sensitivity class and their distance from the source. Human health impacts are also dependent on the existing $PM_{10}$ concentrations in the area.

Tables A2 and A3 summarise the criteria for determining the overall sensitivity of the area to dust soiling and health impacts respectively. The sensitivity of the area to ecological impacts is presented in Table A4.

Table A2: Sensitivity of the Area to Dust Soiling Effects on People and Property

| **Sensitivity of Area** | **Number of Receptors** | **Distance from the Source** | | | |
|---|---|---|---|---|---|
| | | **<20m** | **<50m** | **<100m** | **<250m** |
| High | >100 | **High** | **High** | **Medium** | **Low** |
| | 10-100 | **High** | **Medium** | **Low** | **Low** |
| | 1-10 | **Medium** | **Low** | **Low** | **Low** |
| Medium | >1 | **Medium** | **Low** | **Low** | **Low** |
| Low | >1 | **Low** | **Low** | **Low** | **Low** |

Table A3: Sensitivity of the Area to Health Impacts from Dust

| Receptor Sensitivity | Annual Mean $PM_{10}$ | Number of Receptors | Distance from the Source | | | |
|---|---|---|---|---|---|---|
| | | | <20m | <50m | <100m | <250m |
| High | >32 | >100 | High | High | High | Medium |
| | | 10-100 | High | High | Medium | Low |
| | | 1-10 | High | Medium | Low | Low |
| | 28 - 32 | >100 | High | High | Medium | Low |
| | | 10-100 | High | Medium | Low | Low |
| | | 1-10 | High | Medium | Low | Low |
| | 24 - 28 | >100 | High | Medium | Low | Low |
| | | 10-100 | High | Medium | Low | Low |
| | | 1-10 | Medium | Low | Low | Low |
| | <24 | >100 | Medium | Low | Low | Low |
| | | 10-100 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| Medium | >32 | >10 | High | Medium | Low | Low |
| | | 1-10 | Medium | Low | Low | Low |
| | 28 - 32 | >10 | Medium | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| | 24 - 28 | >10 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| | <24 | >10 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| Low | - | >1 | Low | Low | Low | Low |

Table A4: Sensitivity of the Area to Ecological Impacts from Dust

| Receptor Sensitivity | Distance from the Source | |
|---|---|---|
| | <20m | <50m |
| High | High | Medium |
| Medium | Medium | Low |
| Low | Low | Low |

The magnitude of the dust impacts for demolition, earthworks, construction and trackout is classified as small, medium or large depending on the scale of the proposed works as detailed in Table A5.

Table A5: Dust Emission Magnitude Criteria

| Dust Source | Large | Medium | Small |
|---|---|---|---|
| Demolition | • Total building volume >75,000m$^3$<br>• Potentially dusty material (e.g. concrete)<br>• Onsite crushing and screening<br>• Demolition activities >12m above ground level. | • Total building volume 12,000 - 75,000m$^3$<br>• Potentially dusty construction material<br>• Demolition activities 6 - 12m above ground level. | • Total building volume <12,000m$^3$<br>• Construction material with low potential for dust release (e.g. metal timber or cladding)<br>• Demolition activities <6m above ground level<br>• Demolition during wetter months |
| Earthworks | • Total site area >110,000m$^2$<br>• Potentially dusty soil type (e.g., clay)<br>• >10 heavy earth moving vehicles active at any one time.<br>• Formation of bunds >6m in height | • Total site area 18,000 - 110,000m$^2$<br>• Moderately dusty soil type (e.g., silt)<br>• 5 - 10 heavy earth moving vehicles active at any one time.<br>• Formation of bunds 3 - 6m in height | • Total site area <18,000m$^2$<br>• Soil type with large grain size (e.g. sand)<br>• <5 heavy earth moving vehicles active at any one time.<br>• Formation of bunds <3m in height |
| Construction | • Total building volume >75,000m$^3$<br>• On site concrete batching | • Total building volume 12,000 - 75,000m$^3$<br>• Potentially dusty construction material (e.g., concrete)<br>• On site concrete batching | • Total building volume <12,000m$^3$<br>• Material with low potential for dust release (e.g. metal cladding or timber) |
| Trackout | • >50 HGV movements in any one day (a)<br>• Potentially dusty surface material (e.g. high clay content)<br>• Unpaved road length >100m | • 20 - 50 HGV movements in any one day (a)<br>• Moderately dusty surface material (e.g. silt)<br>• Unpaved road length 50 - 100m | • <20 HGV movements in any one day (a)<br>• Surface material with low potential for dust release<br>• Unpaved road length <50m |

(a) HGV movements refer to outward trips (leaving the site) by vehicles of over 3.5 tonnes.

For each dust emission source, the worst-case area sensitivity is used in combination with the dust emission magnitude to determine the risk of dust impacts prior to mitigation as illustrated in Tables A6 and A7.

Table A6: Risk of Dust Impacts from 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 Risk |

Table A7: Risk of Dust Impacts from Earthworks, Construction and Trackout

| 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 Risk |