

Air Quality Assessment

Mead House, Hayes End Road, UB4 8EW

For Reliant Care Ltd

May 2025

ecolytik

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1 Executive Summary

An assessment has been undertaken to define the potential impact on local air quality of the proposed development at Mead House, Hayes End Lane, in the London Borough of Hillingdon.

The proposed development includes the alterations and refurbishment of the existing building to create a specialist living hub for people with learning disabilities and mental health issues, including 23no. co-living units across ground, first and second floors. Communal kitchen, dining and living rooms, alongside other support functions, are proposed at ground floor level.

The proposed development will significantly reduce the trip generation associated with the Site, which will benefit local air quality. However, the traffic-related emissions are not air quality neutral.

The energy strategy is fully electric; therefore, the building-related emissions are air quality neutral.

A review of existing and projected air quality at the Site indicates that pollutant concentrations are well within the current air quality standards and objectives.

2 Introduction

This report presents an assessment of the potential impact on local air quality of a proposed development at Mead House, Hayes End Lane, in the London Borough of Hillingdon (LBH).

Potential impacts on local air quality during both the construction and operational phases have been assessed in accordance with all relevant national, regional and local planning policies and air quality guidance. An assessment has also been undertaken to assess the suitability of the site for residential development, with respect to the potential exposure of future users to poor air quality.

2.1 Site

The Site is located at the junction of Hayes End Road with Mead House Lane, approximately 230m north of the A4020 Uxbridge Road. The surrounding land uses are predominantly residential.

The proposed development is within the Uxbridge Road Corridor Air Quality Focus Area.

The Site location is presented in Figure 1.

2.2 Legislation and Policy

A review of the applicable policies for the proposed development has been undertaken with reference to air quality.

The proposed development has been designed to meet and exceed (where feasible) the following main policy drivers and guidance:

- Air Quality Strategy (2023)
- National Planning Policy Framework (2024)
- Planning Practice Guidance (2019)
- London Plan (2021)
- London Environment Strategy (2018)
- Hillingdon Local Plan Part 2 Development Management Policies (2020)
- Hillingdon Air Quality Action Plan 2019 – 2024 (2019)
- Hillingdon Air Quality Action Plan 2025 – 2030 Pre-Consultation Draft (2025)

The guidance within these documents at national and local level is presented in more detail in Appendix B.



Figure 1. Approximate site location of Mead House.

3 Methodology

3.1 Construction dust

All construction sites have the potential to generate dust during the construction phase which may have adverse effects at nearby sensitive receptors, both human and ecological.

The potential impact on local air quality during the construction of the proposed development has been assessed in accordance with the Greater London Authority's (GLA's) Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance (SPG, 2014), which recommends the use of the latest version of the Institute of Air Quality Management (IAQM) issued new Construction Dust Guidance (Guidance on the assessment of dust from demolition and construction, IAQM, Version 2.2, January 2024).

Screening criteria are provided such that a detailed risk assessment is required where there are sensitive human health receptors within 250m of the Site boundary or within 50m of roads used by construction traffic (up to 250m from the Site entrance). For ecological receptors, the screening distances are 50m from the Site boundary and within 50m of roads used by construction traffic (up to 250m from the Site entrance).

The risk of dust Impacts is based on the following:

- The sensitivity of the area to health impacts (dependant on the proximity and sensitivity of the nearest receptors, however the risk is higher in locations with existing elevated particulate concentrations)
- The sensitivity of the area to dust impacts (dependant on the proximity and sensitivity of the nearest receptors); and
- The magnitude of the dust emission during demolition, earthworks, construction and from trackout (re-suspended dusty material that has been transported onto the local roads by construction traffic, based on the scale and nature of the proposed works).

These factors are combined to evaluate the potential risk (high, medium or low) and determine the level of mitigation that is required to ensure that any effects are minimised. The identified best practice mitigation measures should be incorporated into a Dust Management Plan (DMP) or Construction Environmental Management Plan (CEMP) for the proposed development.

It should be noted that 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 and local topography (including potential barriers to the dispersion of dust (such as tall vegetation or buildings).

Full details of the IAQM construction dust methodology are provided in Appendix A.

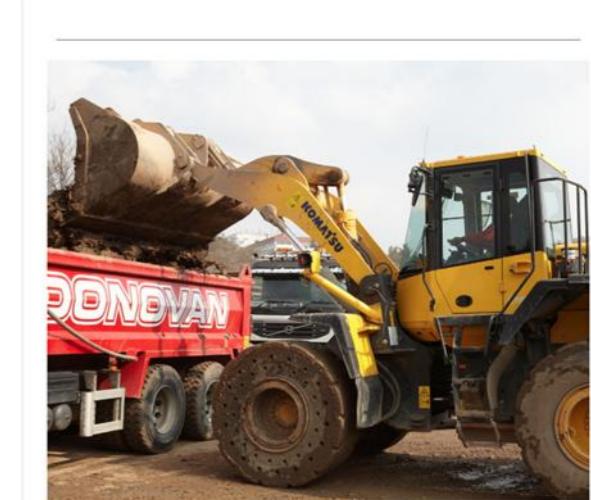
3.2 Non-Road Mobile Machinery (NRMM)

All NRMM must meet the emissions standards specified in Table 1.

An inventory of NRMM should be maintained on site and on the NRMM register. Provided these standards are adhered to, NRMM emissions during the construction phase will not significantly affect local air quality.

Table 1. NRMM Emission Standards.

NRMM	Emission Standard
Engines with a power rating between 37 kW and 560 kW	Stage IV of the 97/68/EC Directive
Machines with constant speed engines e.g., generators	Stage V of the 97/68/EC Directive
Variable speed engines below 56 kW	Stage V of the 97/68/EC Directive



THE CONTROL OF DUST AND EMISSIONS DURING CONSTRUCTION AND DEMOLITION SUPPLEMENTARY PLANNING GUIDANCE

JULY 2014

LONDON PLAN 2011
IMPLEMENTATION FRAMEWORK

MAYOR OF LONDON

3.3 Construction Traffic

The Environmental Protection UK (EPUK)/ IAQM planning guidance (Land-use Planning and Development Control: Planning for Air Quality, January 2017) provides screening criteria to determine the need for a detailed assessment of traffic-related impacts. For developments within or near an AQMA, a detailed assessment is required where:

- There is a change in the annual average daily traffic (AADT) flow of light duty vehicles (LDV) of more than 100 vehicles; and/or
- There is a change in the AADT flow of heavy duty vehicles (HDV) of more than 25 vehicles; and/or
- 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 screening criteria, LDV refers to vehicles under 3.5 tonnes (e.g., cars and vans) and HDV refers to vehicles above 3.5 tonnes.

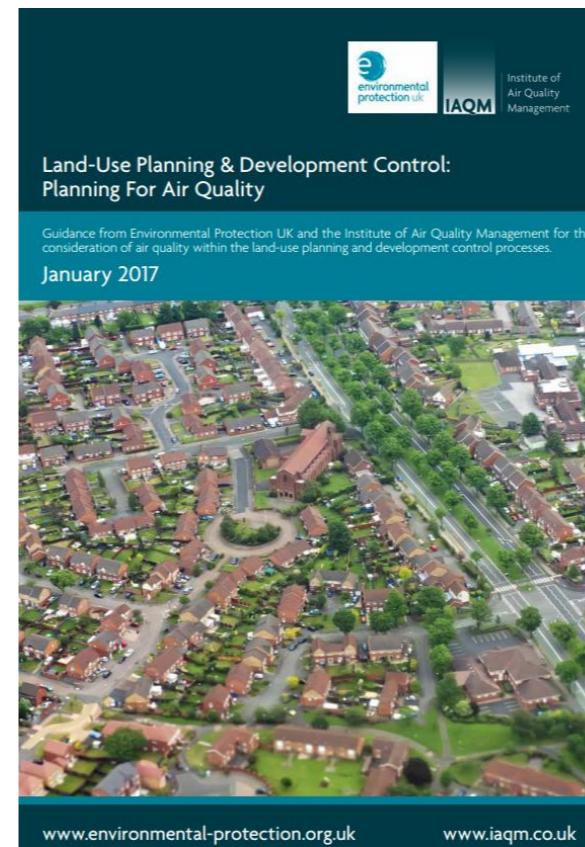
Construction traffic trip generation data for the proposed development is not currently available, however based on the scale of the works, the number of daily vehicle movements is expected to be well below the above thresholds.

On this basis, the construction traffic emissions will not significantly affect local air quality.

3.4 Operational Traffic

The proposed development will include four parking spaces, of which two will be designated 'blue badge'. The residents living on site will not drive vehicles and therefore trips will be made by staff or visitors only.

The proposed trip generation is expected to generate 78 AADT, a reduction of 249 AADT compared with the existing site uses. The reduction in emissions associated with the site will benefit local air quality.



3.5 Building Emissions

The energy strategy for the proposed development is fully electric. There will be no combustion emissions associated with the site and therefore no adverse impact on local air quality.

3.6 Exposure

The London Councils Air Quality Planning Guidance (2007) provides criteria for determining the significance of exposure to air pollution and the level of mitigation required. The Air Pollution Exposure Criteria (APEC) are presented in Table 2.

The applicable ranges assume a downward trend in pollutant concentrations has been established, which is anticipated due to the uptake of electric vehicles and the recent expansion of the Ultra-Low Emission Zone (ULEZ).

A review of local air quality monitoring data, Defra background mapped pollutant concentrations and London Atmospheric Emission Inventory (LAEI) projections, has been undertaken to determine whether the Site is suitable for residential development, as proposed.

Acknowledging that there is no safe level of air pollution, LBH are aiming to achieve compliance with the 2021 WHO Guidelines as soon as possible. Therefore, in accordance with local policy, potential exposure has been assessed with respect to the following 2021 World Health Organisation (WHO, 2021) Guidelines, in addition to the current air quality standards and objectives:

- NO_2 – $10 \mu\text{g}/\text{m}^3$, as an annual mean
- PM_{10} – $15 \mu\text{g}/\text{m}^3$, as an annual mean
- $\text{PM}_{2.5}$ – $5 \mu\text{g}/\text{m}^3$, as an annual mean

Mitigation measures are recommended, where required.

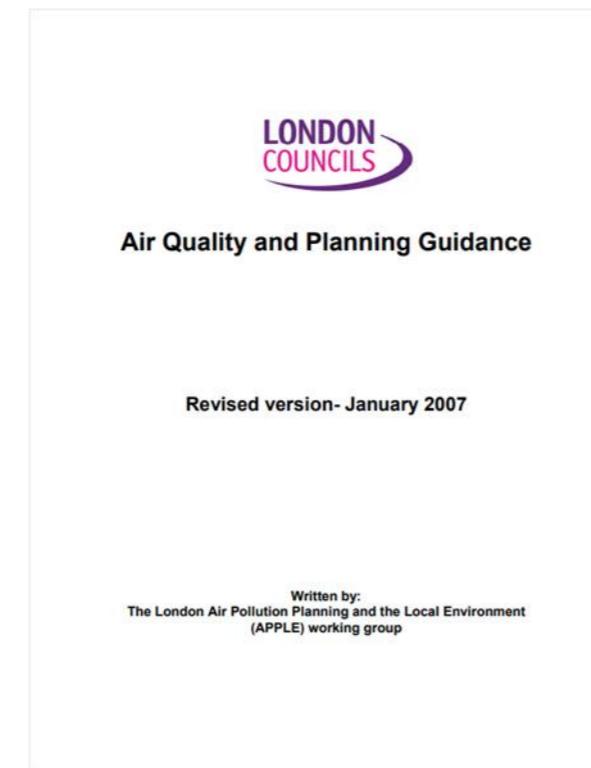


Table 2. Air Pollution Exposure Criteria.

Category	Applicable Range NO_2 Annual Mean	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% above 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 ensure 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.

4 Baseline Air Quality

4.1 Local Air Quality Monitoring

The primary source of NO_x and particulate emissions in Hillingdon is road transport and aviation. During the pandemic there was a significant reduction in traffic movements within the Borough, leading to a decline in measured pollutant concentrations (particularly NO₂) in many locations. Automatic traffic counts undertaken in 2023 indicate that daily vehicle movements remain below pre-pandemic (2019) levels in the borough (<https://roadtraffic.dft.gov.uk/local-authorities/56>).

The nearest automatic monitoring sites to the proposed development are South Ruislip, Hayes and Southall (Green Quarter); details of these sites are presented in Table 3.

Annual mean NO₂ concentrations are also measured via an extensive network of passive diffusion tubes. Details of the nearest diffusion tube monitoring locations to the proposed development are presented in Table 3.

The automatic and diffusion tube monitoring locations are shown in Figure 2 and Figure 3, respectively on the following page.

Concentrations of NO₂, PM₁₀, PM_{2.5} measured between 2019 and 2024 are presented in Table 4.

The data show the significant reduction in annual mean NO₂ concentrations that occurred in 2020 due to the restrictions on travel imposed by the Government during the Covid-19 pandemic lockdowns. The 2024 automatic monitoring data indicate that there has been another significant fall from 2023 levels, which is likely due to the August 2023 expansion of the ULEZ to cover all London Boroughs.

Tube HD49, which is the closest to the proposed development, was discontinued in 2019, however concentrations measured in the previous 5 years (2014 – 2018) ranged from 20.9 to 26.5 µg/m³, well below the air quality objective of 40 µg/m³. Concentrations measured at other roadside locations in the area are also well within the objective but significantly exceed the 2021 WHO Guideline of 10 µg/m³.

Diffusion tubes are not able to measure short-term concentrations, however a study undertaken on behalf of Defra (Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites, D Laxen and B Marner, July 2003) indicated that where annual mean concentrations are below 60 µg/m³, an exceedance of the 1-hour mean objective is unlikely to occur. The current Defra Local Air Quality Management Technical Guidance (Local Air Quality Management Technical Guidance (TG22), Defra, August 2022) confirms that this remains a valid assumption. Annual mean NO₂ concentrations measured at roadside locations in the area are less than 50% of this threshold, indicating that the risk of a short-term exceedance in the area is negligible.

The automatically measured PM₁₀ concentrations were comparatively unaffected by changes in traffic during the pandemic. The annual mean concentrations are well below the air quality objective of 40 µg/m³ but significantly exceed the 2021 WHO Guideline of 15 µg/m³ at roadside locations.

The number of measured exceedances of the 24-hour mean objective of 50 µg/m³ has been consistently below the 35 allowable per year. The WHO short-term (24-hour) Guideline (45 µg/m³) is not dissimilar from the current air quality standard (50 µg/m³), however only 3-4 exceedances per year are permitted. Based on the concentrations measured at suburban background monitoring site EA010 in 2022, it is possible with ongoing improvements in air quality, that the Guideline may be met at urban background locations in the area in the near future.

The annual mean background PM_{2.5} concentration measured at EA010 in 2022 was below both the current air quality standard of 20 µg/m³ and the Government's 2040 concentration target of 10 µg/m³. The data suggest, however, existing concentrations at suburban background locations in the area are unlikely to be compliant with the 2021 WHO Guideline of 5 µg/m³.

Table 3. Air quality monitoring locations.

Site ID	Site Name	Easting	Northing	Type	Pollutants Monitored
Automatic					
HI1	Hillingdon 1 - South Ruislip	510857	184917	Roadside	NO ₂ , PM ₁₀
HIL5	Hillingdon Hayes	510303	178882	Roadside	NO ₂ , PM ₁₀
EA010	Green Quarter	511740	180048	Suburban Background	NO ₂ , PM ₁₀ , PM _{2.5}
Diffusion Tube					
HILL04	Hillingdon Primary School Uxbridge Road Hillingdon (on wire fence)	507617	182506	Roadside	NO ₂
HILL05	Hillingdon Hospital Monitoring Station Colham Road (Near John Rich House on former junction to Pield Heath Road)	506989	181920	Roadside	NO ₂
HD49	83 Hayes End Drive Hayes End Middlesex (on drainpipe)	508651	182274	Roadside	NO ₂

Table 4. Measured NO₂, PM₁₀ and PM_{2.5} Concentrations.

Site ID	2019	2020	2021	2022	2023	2024
Annual Mean NO₂ (µg/m³)						
HI1	34	16	27	28	24	20
HIL5	41	31	34	34	34	29
EA010	-	-	-	17	-	-
HILL04	27.8 (90% data capture)	22.6*	23.3	24.7	21.3	-
HILL05	34.1*	27.4*	25.4	27.8	26.7	-
HD49	21.7*	-	-	-	-	-
Number of NO₂ 1-Hour Means > 200 µg/m³						
HI1	0	0	0	0	0	0
HIL5	0	0	0	0	0	0
EA010	-	-	-	0	-	-
Annual Mean PM₁₀ (µg/m³)						
HI1	17	18	17	19	19	18
HIL5	28	25	26	30	27	22
EA010	-	-	-	16	-	-
Number of PM₁₀ 24-Hour Means > 50 µg/m³						
HI1	3	1	0	4	1	0
HIL5	25	16	25	23	16	6
EA010	-	-	-	6	-	-
Annual Mean PM_{2.5} (µg/m³)						
EA010	-	-	-	9	-	-

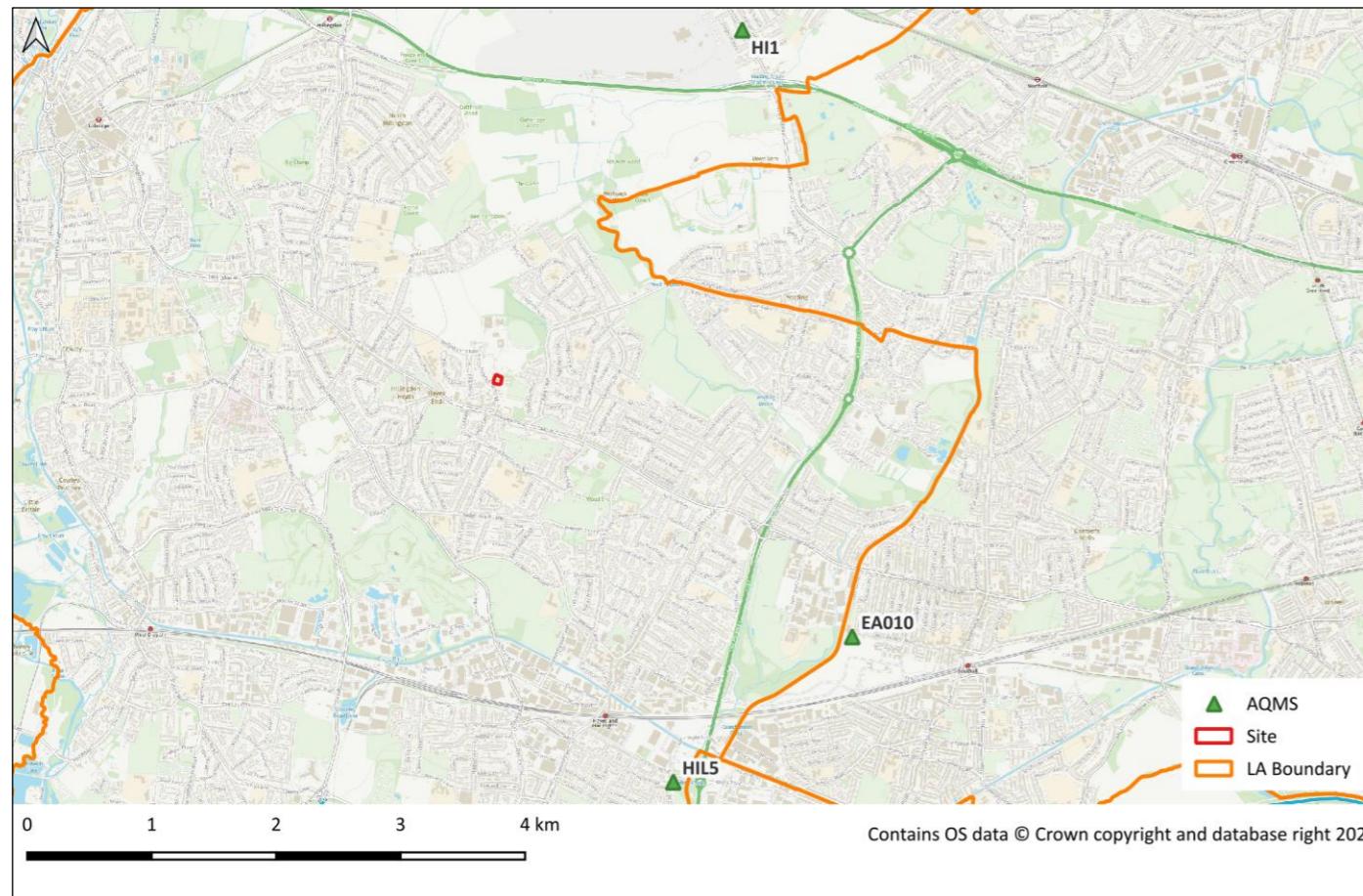


Figure 2. Automatic Monitoring locations.



Figure 3. Diffusion Tube Monitoring locations.

4.2 Defra Background Mapped Data

In the absence of a local background monitoring site, concentrations of NOx, NO₂, PM₁₀ and PM_{2.5} have been obtained from the Defra UK Background Air Pollution maps (<https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>). These 1km grid resolution maps are derived from a complex modelling exercise that considers emissions inventories and measurements of ambient air pollution from both automated and non-automated sites. The latest background maps were issued in November 2024 and are based on 2021 monitoring data, with projections for future years.

A summary of the maximum 2025 and 2030 mapped background concentrations at the proposed development is presented in Table 5.

The data illustrate the anticipated improvement in background air quality over the next five years.

4.3 London Atmospheric Emissions Inventory (LAEI)

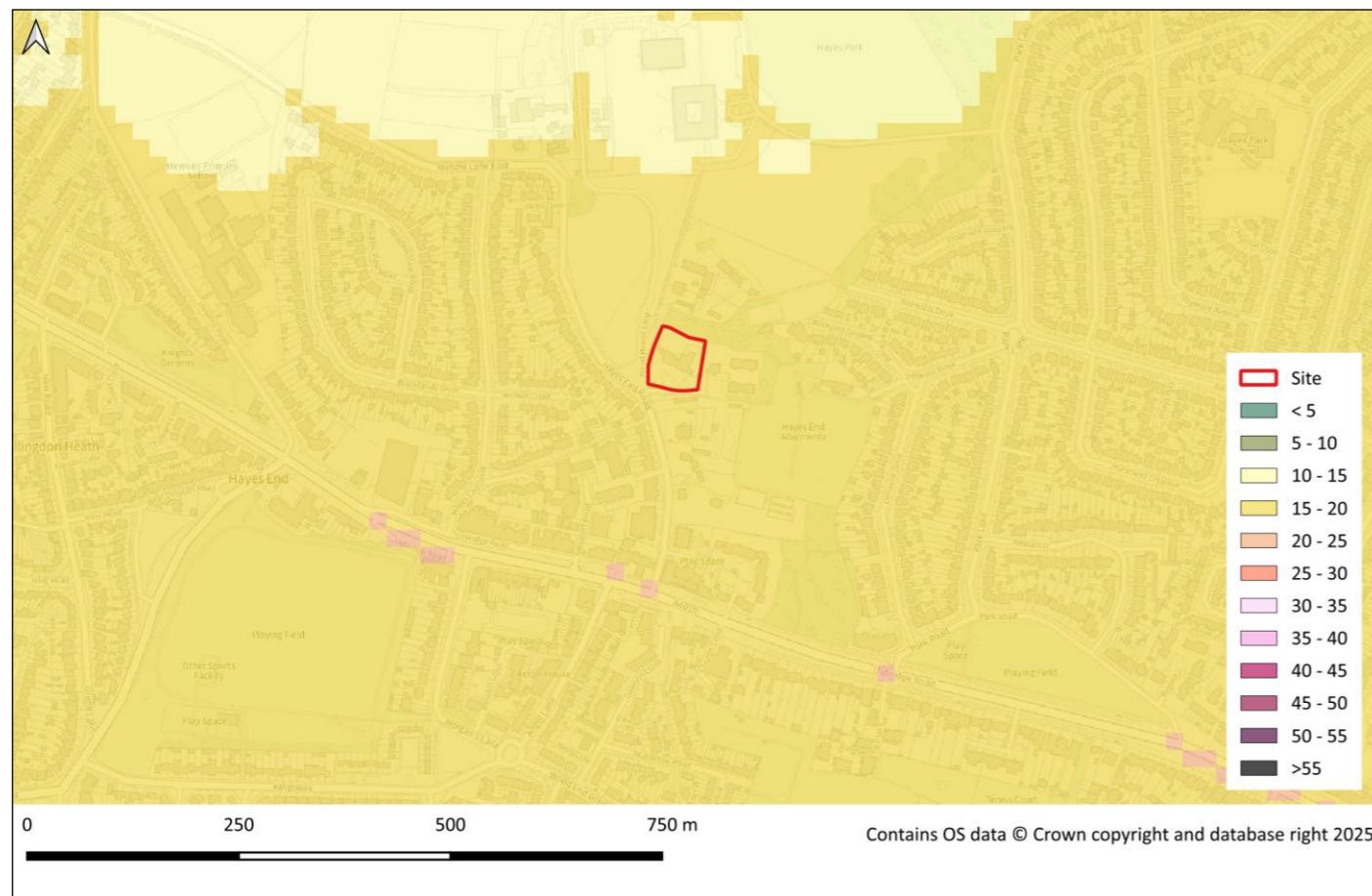
Projected 2030 NO₂, PM₁₀ and PM_{2.5} concentrations across Greater London are available from the LAEI. The modelled concentrations include the impact of the expansion of the ULEZ to the north/south circular, but not the August 2023 expansion to include the whole of Greater London. The NO₂, PM₁₀ and PM_{2.5} concentrations at the proposed development are presented in Figure 4, 5 and 6 respectively.

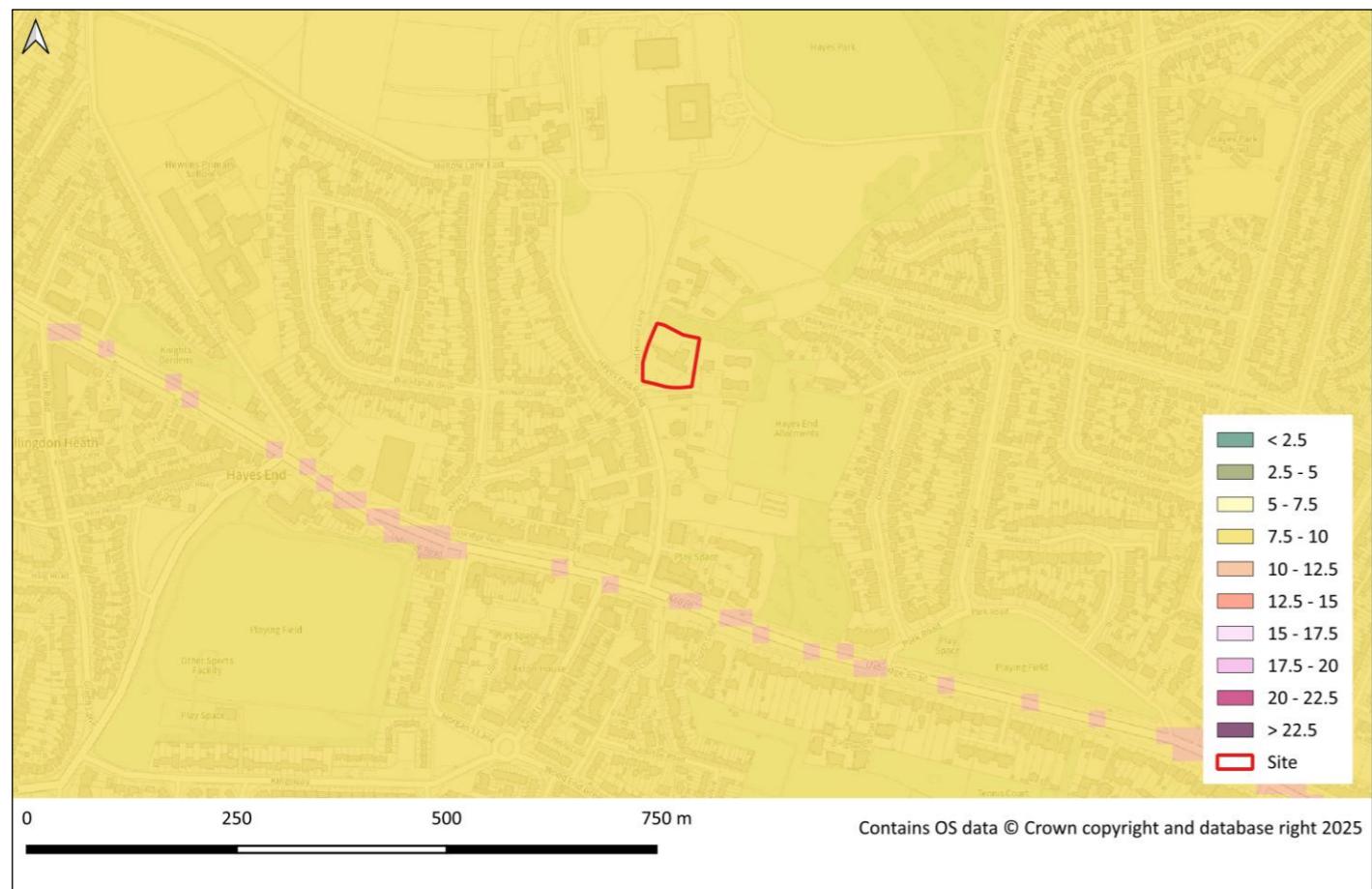
Again, the data show the anticipated improvement in background air quality over the next five years.

With regard to the 2021 WHO Guidelines (annual mean), the data indicate that compliance is expected for PM₁₀, but not NO₂ or PM_{2.5} within the next five years.

Table 5. Defra Mapped Background NOx, NO₂, PM₁₀ and PM_{2.5} Concentrations.

Pollutant	2025 Annual Mean (µg/m ³)	2030 Annual Mean (µg/m ³)	Air Quality Standard (µg/m ³)	WHO 2021 Guideline (µg/m ³)
NO ₂	14.8	12.7	40	10
PM ₁₀	13.5	13.2	40	15
PM _{2.5}	8.1	7.7	20	5

Figure 4. LAEI 2030 Projected Annual Mean NO₂ Concentrations (µg/m³).Figure 5. LAEI 2030 Projected Annual Mean PM₁₀ Concentrations (µg/m³).



5 Exposure Assessment

A review of the UK Pollutant Release and Transfer Register (<https://ptrr.defra.gov.uk>) indicates that there are no significant non-road air emission sources in the area that are likely to significantly affect air quality at the Proposed Development. Pollutant concentrations at the Site are therefore likely to be primarily influenced by traffic on the local road network.

The Proposed Development is approximately 230m from the nearest heavily trafficked road (Uxbridge Road) and therefore pollutant concentrations at the Site are expected to be close to background level.

The local air quality monitoring data and Defra background maps indicate that existing NO₂, PM₁₀ and PM_{2.5} concentrations at roadside and background locations in the area are currently well within the air quality standards and objectives (exposure category APEC-A).

The Defra background maps and LAEI projections indicate that existing annual mean PM₁₀ concentrations at the Site may be below the 2021 WHO Guideline of 15 µg/m³, however compliance with the Guidelines for NO₂ (10 µg/m³) and PM_{2.5} (5 µg/m³) is unlikely within the next 5 years.

6 Construction Dust Risk Assessment

6.1 Sensitivity of the Area to Health and Dust Soiling Impacts

The proposed development is in a predominantly residential area with existing dwellings adjacent to the Site.

A wind rose for London City Airport is presented in Figure 7, which shows that the prevailing wind direction in the area is from the west-southwest. Dust soiling impacts would therefore be most likely to affect receptors to the east-northeast of the site.

The sensitivity of the area to impacts on human health is dependent on existing particulate concentrations, such that the risk of dust generated on site resulting in an exceedance of the air quality objectives is higher in locations where existing concentrations are elevated. The mapped annual mean PM_{10} concentration at the Site is $13.7 \mu\text{g}/\text{m}^3$, and therefore it is assumed that the existing PM_{10} concentration at receptors within 250m of the Site is unlikely to exceed $24 \mu\text{g}/\text{m}^3$.

There are no local, national or European habitat sites within 50m of the Site, therefore the sensitivity of the area to ecological impacts is low.

A summary of the area sensitivity to health and dust soiling impacts is presented in Table 6 and Table 7, respectively.

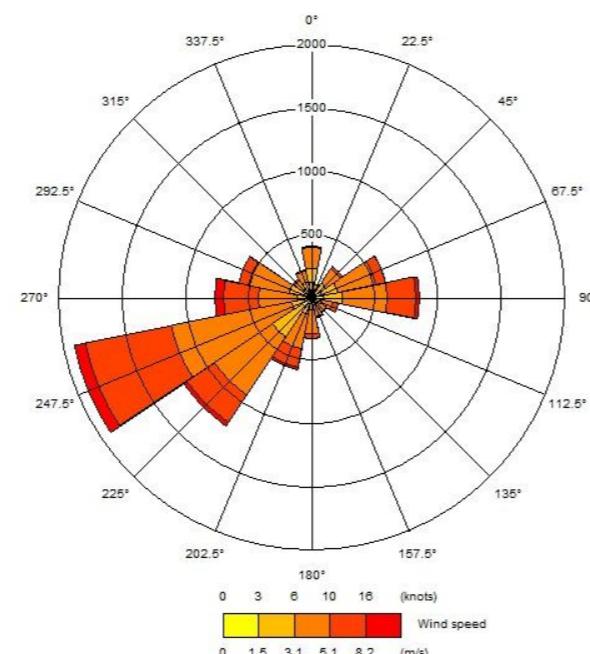


Figure 7. Wind Rose London City Airport (2023).

Table 6. Sensitivity of the area to health impacts.

Receptor	Receptor Sensitivity	Distance from Site	Approx number of receptors	Area Sensitivity
Residential dwellings	High	<20m	<10	Low
		<50m	20 - 30	Low
		< 100m	60 - 70	Low
Overall Sensitivity of the Area to Health Impacts				Low

Table 7. Sensitivity of the area to dust soiling impacts.

Receptor	Receptor Sensitivity	Distance from Site	Approx number of receptors	Area Sensitivity
Residential dwellings	Medium	<20m	<10	High
	Medium	<50m	20 - 30	Medium
	Low	< 100m	60 - 70	Medium
Overall Sensitivity of the Area to Dust Soiling Impacts				Medium

6.2 Magnitude of dust emissions

A summary of the potential dust emission magnitude from demolition, earthworks, construction and trackout is presented in Table 8.

A summary of the potential risk of dust impacts, prior to mitigation, based on the 'high' sensitivity of the area to health and dust soiling impacts, is presented in Table 9.

Due to the small scale of the proposed development, the overall risk of dust impacts is considered to be 'low'. A summary of the recommended mitigation measures for the Site is presented in Section 8.

Table 8. Dust emissions magnitude.

Dust Source	Proposed Development	Dust Emission Magnitude
Demolition	Minor demolition works at ground, first and second-floor level. Total demolition volume will be < 1000 m ³ . Maximum demolition height of 11m. On-site crushing and screening of demolition material is unlikely.	Small
Earthworks	Groundworks for small ground-floor extensions on western and northern elevations. One heavy earth moving vehicle. Stockpiling of dusty material is unlikely. Moderately dusty soil type (clay, silt and sand).	Small
Construction	Construction volume will be <1000 m ³ . Works will be primarily internal. No concrete batching will be undertaken on Site.	Small
Trackout	Based on the scale of the works, less than 5 outward HDV movements per day are anticipated. There will be no vehicular access over unmade ground.	Negligible

Table 9. Risk of dust impacts prior to mitigation.

Dust Source	Risk of Health Impacts	Risk of Dust Soiling Impacts	Overall Risk
Demolition	Negligible	Low	Low
Earthworks	Negligible	Low	Low
Construction	Negligible	Low	Low
Trackout	Negligible	Negligible	Negligible
Overall Risk of Dust Impacts, Prior to Mitigation			Low

7 Air Quality Neutral Assessment

The London Plan Air Quality Neutral Guidance sets out the maximum permissible (benchmarked) emissions of NO₂ and particulate matter from a proposed development, based on its size and use-class. All new developments are required to meet or improve upon these Air Quality Neutral (AQN) benchmarks to minimise impacts on local air quality. Two sets of benchmarks are provided:

- Building Emissions Benchmark (BEB) – emissions associated with supplying heat and energy to the development; and
- Transport Emissions Benchmark (TEB) – emissions from private vehicles travelling to and from the development.

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.*” Developments are excluded from AQN assessment if there will be:

- no additional parking spaces.
- no increase in private vehicle trips (not including taxi's, deliveries, servicing and HDV's); and
- no new combustion plant (e.g., gas boilers).

7.1 Building-Related Emissions

The energy strategy for the proposed development is fully electric and therefore there will be no combustion emissions associated with the Site. On this basis, the development is deemed to meet the Air Quality Neutral Benchmarks and further assessment is not required.

7.2 Transport-Related Emissions

The benchmarked and proposed development trip rates for the proposed development are presented in Table 10.

The calculation has used the TEB for residential use in Outer London and the proposed development trip generation of 78 AADT.

The development trip rate exceeds the benchmarked trip rate and therefore the Proposed Development is not Air Quality Neutral with respect to transport related emissions.

Table 10. Benchmarked and Proposed Development Trip.

	Number of Dwellings	TEB (trips/ dwelling)	Benchmark Trips/ Year
Benchmarked	23	447	10,281
Proposed Development			28,470*
Difference			+18,189

* 78 AADT



8 Mitigation

8.1 Construction phase

In accordance with the IAQM guidance and based on the assessed risk of dust impacts (see Table 9), the 'Highly recommended' and 'Desirable' best practice mitigation measures outlined in Table 11 should be implemented on site.

8.2 Operational phase

Pollutant concentrations at the Site are well below the current UK air quality standards and objectives for the protection of health.

An exceedance of the 2021 WHO Guidelines for NO₂ and PM_{2.5} is likely at the Site, however there is currently no statutory requirement for compliance. On this basis, on-site mitigation to minimise exposure is not required.

The proposed development is not air quality neutral with respect to traffic-related emissions. Additional mitigation measures or a Section 106 payment will be agreed upon in consultation with LBH.

Table 11. IAQM recommended mitigation measures.

Category	Measure
Highly recommended mitigation measures	
Communications	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 the 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	<ul style="list-style-type: none"> - Carry out regular site inspections, record inspection results, and make an inspection log available to the local authority when asked. - Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. - Where appropriate and relevant, agree dust deposition, dust flux, or real-time PM₁₀ 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	<ul style="list-style-type: none"> - Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. - Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. - Avoid site runoff of water or mud.
Operating vehicle/machinery and sustainable travel	<ul style="list-style-type: none"> - Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable. - 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.
Operations	<ul style="list-style-type: none"> - Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems. - Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. - Use enclosed chutes and 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.
Waste management	<ul style="list-style-type: none"> - Avoid bonfires and burning of waste materials.
Demolition	<ul style="list-style-type: none"> - Ensure effective water suppression is used during demolition operations. Handheld 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.
Desirable mitigation measures	
Monitoring	<ul style="list-style-type: none"> - 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 window sills within 100 m of site boundary, with cleaning to be provided if necessary.
Preparing and maintaining the site	<ul style="list-style-type: none"> - Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. - Keep site fencing, barriers and scaffolding clean using wet methods. - Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. - Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/machinery and sustainable travel	<ul style="list-style-type: none"> - Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas
Operations	<ul style="list-style-type: none"> - 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.
Demolition	<ul style="list-style-type: none"> - Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). - Avoid scabbling (roughening of concrete surfaces) if possible.
Construction	<ul style="list-style-type: none"> - 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.

9 Conclusions

An assessment has been undertaken to determine the potential impact on local air quality of the proposed development at Hayes End Lane, in the London Borough of Hillingdon.

The risk of dust impacts arising during the construction phase has been assessed in accordance with the IAQM's Construction Dust Guidance. Based on the nature and scale of the proposed works and the proximity of local sensitive receptors, the Site has been assessed as 'low risk'; mitigation measures are recommended to ensure that off-site impacts are negligible.

The proposed development will reduce trips substantially compared with the existing site uses, resulting in a beneficial impact on local air quality. The traffic-related emissions are, however, not air quality neutral. Mitigation measures or a Section 106 payment will be agreed with the LBH.

The energy strategy is 100% electric and therefore there will be no significant emissions to air associated with the site and no impact on local air quality. The proposed development is therefore air quality neutral with respect to building-related emissions.

A review of local air quality monitoring data, Defra background maps and LAEI projections indicates that pollutant concentrations at the Site are well below the current air quality standards for the protection of health.

Following the implementation of the recommended mitigation measures, air quality does not pose 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 12.

The sensitivity of the area 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 PM₁₀ concentrations in the area.

Table 13 and Table 14 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 15.

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 16.

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 Table 17, and Table 18.

Table 12. Receptor sensitivity.

Sensitivity	Human Health	Dust Soiling	Ecological
High	<p>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)</p> <p>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.</p>	<p>Users can reasonably expect enjoyment of a high level of amenity; or The appearance, aesthetics or value of their property would be diminished by soiling; and</p> <p>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.</p> <p>Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms</p>	<p>Locations with an international or national designation and the designated features may be affected by dust soiling; or</p> <p>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).</p> <p>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.</p>
Medium	<p>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).</p> <p>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</p>	<p>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</p> <p>The appearance, aesthetics or value of their property could be diminished by soiling; or</p> <p>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.</p> <p>Indicative examples include parks and places of work.</p>	<p>Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or</p> <p>Locations with a national designation where the features may be affected by dust deposition.</p> <p>Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.</p>
Low	<p>Locations where human exposure is transient (c)</p> <p>Indicative examples include public footpaths, playing fields, parks and shopping streets.</p>	<p>The enjoyment of amenity would not reasonably be expected (d); or</p> <p>Property would not reasonably be expected (d) to be diminished in appearance, aesthetics or value by soiling; or</p> <p>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.</p> <p>Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short-term car parks (e) and roads.</p>	<p>Locations with a local designation where the features may be affected by dust deposition.</p> <p>Indicative example is a local Nature Reserve with dust sensitive features.</p>

- 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.

Table 13. Sensitivity of the Area to Dust Soiling Effects on People and Property.

Receptor Sensitivity	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 14. 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 15. 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

Table 16. Dust Emission Magnitude Criteria.

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

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

Table 17. 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 18. 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

Appendix B – Legislation and Policies

The Air Quality Strategy (AQS)

The current Air Quality Strategy was published in August 2023 and sets out policy targets (objectives) for airborne pollutants. The Standards are concentrations measured over a specified time period that are considered acceptable in terms of the effect on health and the environment. The Objectives are the target date on which exceedances of a Standard must not exceed a specified number. The air quality standards and objectives are set into UK law via the Air Quality Standards Regulations 2010 and EU Exit Regulations (2020). In the context of the proposed development, the pollutants of concern are nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $\text{PM}_{2.5}$), which in urban locations are primarily associated with road traffic emissions. The current Air Quality Standards for these pollutants, that are applicable in England, are presented in Table 19.

On 31st January 2023 the Government published an Environmental Improvement Plan which includes a legally binding Annual Mean Concentration Target (AMCT) of $10 \mu\text{g}/\text{m}^3$, to be achieved by 2040. The Plan also includes an interim target of $12 \mu\text{g}/\text{m}^3$ to be achieved by the end of January 2028. The $10 \mu\text{g}/\text{m}^3$ target for $\text{PM}_{2.5}$ has been adopted into UK law via the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

Table 19. Air Quality standards.

Pollutant	Averaging Period	Concentration ($\mu\text{g}/\text{m}^3$)	Comments
NO_2	1-hour	200	Not to be exceeded more than 18 times per calendar year (equivalent to the 99.8th percentile of 1-hour means).
	Calendar year	40	-
PM_{10}	24-hour	50	Not to be exceeded more than 35 times per calendar year (equivalent to the 90.4th percentile of 24-hour means).
	Calendar year	40	-
$\text{PM}_{2.5}$	Calendar year	20	-

National Planning Policy Framework (NPPF)

The NPPF (Department for Communities and Local Government, National Planning Policy Framework, December 2023) 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 planning 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".*

The Planning Practice Guidance (PPG)

The PPG (Ministry of Housing, Communities & Local Government, Planning Practice Guidance: Air Quality, November 2019), 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.

The London Plan

Policy SI1 (Improving Air Quality) of the London Plan (2021) 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:

- lead to further deterioration of existing poor air quality.*
- 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.*
- 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:

- Development proposals must be at least air quality neutral.*
- 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 retrofitted mitigation measures.*
- 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.*
- 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."

London Environment Strategy

Chapter 4 of the London Environment Strategy (2018) outlines the Mayor's commitment to improving air quality in London. The strategy aims plan to significantly reduce NO₂ and particulate (PM₁₀, 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.

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."

Hillingdon Local Plan

The Hillingdon Local Plan: Part 2 (LBH, 2020) sets out strategic objectives and policies for development in the Borough. Policy DME14 relates specifically to air quality and states that:

- A. Development proposals should demonstrate appropriate reductions in emissions to sustain compliance with and contribute towards meeting EU limit values and national air quality objectives for pollutants.
- B. Development proposals should, as a minimum:
 - i) be at least "air quality neutral".
 - ii) include sufficient mitigation to ensure there is no unacceptable risk from air pollution to sensitive receptors, both existing and new; and

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

In addition, policy DME11 (Living Walls and Roofs and on-site Vegetation) states that: 'Major development in Air Quality Management Areas must provide onsite provision of living roofs and/or walls. A suitable offsite contribution may be required where onsite provision is not appropriate'.

Hillingdon Air Quality Action Plan

The current Hillingdon Air Quality Action Plan (LBH, 2019) outlines the Council's commitment to improving air quality in the Borough. Borough-wide actions include:

- Leading by example by reducing emissions from the Council's vehicle fleet and buildings.
- Reducing public exposure and improving air quality around schools.
- Implementation of improvement strategies in the AQ Focus Areas.
- Ensure the integration of the 'Health Streets' approach in relevant council work programmes.
- Ensure the planning system supports the achievement of air quality improvements in relation to new developments.
- Raise awareness via targeted campaigns.

LBH have recently published a draft new Action Plan (LHB, 2025), which is currently under consultation. The core aims of the plan are as follows:

- 1) To reduce pollutant emissions within our Borough to the maximum possible extent, with all emissions being mitigated.
- 2) To reduce pollution concentrations, striving to achieve the World Health organization (WHO) guidelines in the shortest time possible.
- 3) Remove inequalities in exposure to poor air quality and protect the vulnerable.
- 4) Continue to use the planning system to ensure:

a. new development does not contribute additional air pollution; and

b. new development in our Focus Areas contribute improvements in air quality.

5) Raise awareness on the health impacts and preventive measures to be taken to safeguard health.

6) Influence change and lead by example.

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