LOVE DESIGN STUD/O

AIR QUALITY ASSESSMENT (FOR PLANNING)

Uxbridge Road, Hayes
by Love Design Studio

September 2022
PR461_V4

CONTENTS

EXECUTIVE SUMMARY

Love Design Studio have been requested to undertake an air quality assessment review for the proposed development at Uxbridge Road, Hayes.

Within the site currently stands a 60’s 12 storey hotel building comprising 170 keys, meeting rooms and gym.

The proposed development comprises the demolition of ground floor entrance, parking structure and north-east and south-west wings of the existing building, and refurbishment and extension of existing hotel to include additional accommodation at roof level and full height extension on the north elevation, together with walkways connecting to new buildings of between 6 and 8 storeys, to create additional hotel floor space (Use Class C1) and commercial floorspace (Use Class E(g)), along with ancillary facilities, parking and landscaping.

An assessment has been undertaken to determine whether there are any air quality constraints to the redevelopment of the site and to identify whether mitigation measures are required to minimise off-site impacts or protect future occupants from poor air quality.

The development traffic will not significantly affect local air quality.

Pollutant concentrations at the ground-floor building façades fall within the London Council‘s exposure category APEC-A and therefore mitigation is not required to protect future occupants from poor air quality.

Summaries of each element are set out below:

EXISTING AIR QUALITY

The primary source of airborne emissions in Hillingdon is road traffic and heating systems; key pollutants of concern with respect to health effects, are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$).

A review of local air quality monitoring data indicates that annual mean NO_2 concentrations in Hillingdon continue to exceed the air quality objective of 40 μg/m^3 at a number of locations in the Borough. Particulate concentrations, however, are well within the relevant objectives.

CONSTRUCTION DUST

A construction dust risk assessment has been undertaken following the guidance in the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014b). Guidance for mitigation can be found within the body of this report. Following the successful implementation of the recommended best practice dust control measures, the off-site dust impacts are expected to be negligible.

TRAFFIC EMISSIONS

The requirement to assess the impact of both construction traffic has been screened out using the screening criteria in the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) planning guidance (EPUK and IAQM, 2017).

During the operational phase, the proposed development is expected to generate an additional 178 vehicle trips per day. The majority of these trips will be minibuses shuttling guests to and from the Hayes and Harlington trains station. A detailed assessment has been undertaken to assess the potential effect of the additional emissions on local air quality (NO_2, PM_{10} and $PM_{2.5}$). The impact at worst-case sensitive receptor locations adjacent to the affected road links is predicted to be negligible.

EXPOSURE

Detailed dispersion modelling has been undertaken to predict NO_2, PM_{10} and $PM_{2.5}$) concentrations at the proposed development. The predicted concentrations are well within the long-term air quality objectives (APEC-A) and the risk of an exceedance of the short-term objectives for NO_2 and PM_{10} is negligible.

BUILDING EMISSIONS

The proposed energy strategy for the new development is 100% electric.

INTRODUCTION

Love Design Studio have been requested to undertake an air quality assessment review for the proposed development at Uxbridge Road, Hayes.

Within the site currently stands a 60's 12 storey hotel building comprising 170 keys, meeting rooms and gym.

The proposed development comprises the demolition of ground floor entrance, parking structure and north-east and south-west wings of the existing building, and refurbishment and extension of existing hotel to include additional accommodation at roof level and full height extension on the north elevation, together with walkways connecting to new buildings of between 6 and 8 storeys, to create additional hotel floor space (Use Class C1) and commercial floorspace (Use Class E(g)), along with ancillary facilities, parking and landscaping.

REQUIREMENTS OF ASSESSMENT

There is the potential for construction activities to impact upon nearby existing sensitive receptors. The main pollutants of concern related to construction activities are dust and PM_{10}.

The London Borough of Hillingdon (LBC) has declared the entire borough an Air Quality Management Area (AQMA) for exceedances of the annual mean nitrogen dioxide (NO_2) objective.

The proposed development will increase HDV traffic on the local road network by 178 movements per day. Detailed dispersion modelling has therefore been undertaken to determine whether the additional emissions will significantly affect local air quality.

Dispersion modelling has also been undertaken to predict concentrations at the proposed development to determine whether future occupants will be exposed to poor air quality.

The assessment has been prepared considering all relevant local and national guidance and regulations.

SITE DESCRIPTION

The proposed development site is located on the A4020 Uxbridge Road, Hayes. The site is bound to the west by Springfield Road. Land-uses to the north, beyond Uxbridge Road are predominantly residential, whereas the area immediately surrounding the site is predominantly light industrial and commercial.

Figure 1: Site plan aerial view with the proposed development (red boundary)

AIR QUALITY POLLUTANTS

The pollutants for consideration in this assessment are nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$).

The air is naturally made up primarily of Nitrogen (N_2) and Oxygen (O_2), with a relatively small proportion of Argon, Carbon dioxide and other gases. Added to this are a number of gases and microscopic particulate solids that, even at relatively low atmospheric concentrations, can affect air quality, damaging health and the natural and built environment. Some of these pollutants can also contribute to climate change.

Some pollutants remain relatively close to their sources and have a local effect (such as NO_2 from road transport), whereas others can be transported hundreds or thousands of kilometres from source via upper tropospheric air currents.

NITROGEN OXIDES (NOX)

Petrol and diesel emissions from road traffic are the main sources of nitrogen oxides (NOx) in many urban areas, particularly close to busy roads. They are also a source of particulate matter, especially from brake and tyre wear and re-suspended dusts, which can also be generated by electric vehicles. Diesel trains, shipping and aviation are also a source of NOx, sulphur dioxide (SO_2) and particulate matter.

Domestic wood burning is an increasing source of particulate matter affecting ambient air in urban areas. Gas boilers are also a major source of nitrogen oxides (NOx). Historically, coal burning was also a significant source of sulphur dioxide (SO_2) and particulate matter leading to smog conditions. Paints, cleaning products, carpets and furnishings can also release volatile organic compounds (VOCs), adding to emissions from heating and cooking appliances and ingress of outdoor air pollution sources to affect indoor air.

Nitrogen oxides (NOx) are emitted in the form of nitric oxide (NO) and nitrogen dioxide (NO_2). Almost all NOx are formed through combustion processes (a very small amount is released from agriculture or waste processes).

PARTICULATE MATTER (PM)

Unlike pollutant gases, PM is not typically defined by its chemical composition. PM is made up of a wide range of substances (solid or liquid) that have varying sizes, shapes, sources and chemical compositions.

PM is most commonly defined by its size, the most common being PM_{10} – i.e., aerodynamic diameter <10 µm. Other common measures are of $PM_{2.5}$ and $PM_{1.0}$ (fine) and $PM_{0.1}$ (ultrafine/nano-particles).

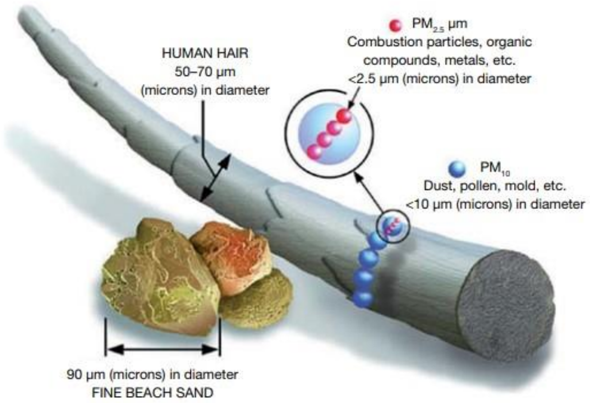

Figure 2: Schematic comparing particulate matter size fractions against a human hair and a grain of sand (Source: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM)

PLANNING POLICY

There are various National, Regional and Local planning policy documents and supplementary design guides available to help steer designers and assessors in minimising the impacts of new development on local air quality and for the air quality experienced by new habitants to be safe.

The various policy documents are set out below:

THE AIR QUALITY STRATEGY

Part IV of The Environment Act 1995 required the UK Government to prepare an Air Quality Strategy. The Air Quality Strategy (Defra, 2007) provides an overview and outline of ambient air quality policy in the UK and the devolved administrations. The strategy sets out air quality standards and objectives intended to protect human health and the environment.

The air quality standards and objectives for NO_2, PM_{10} and $PM_{2.5}$, as set out in the Air Quality Standards Regulations 2010 (The Stationary Office, 2010), are summarised in Table 1. For PM_{10} and NO_2 these were to have been achieved by 2004 and 2005 respectively and continue to apply in all future years thereafter. The objective for $PM_{2.5}$ is an exposure reduction target, however there is increasing evidence that fine particles are particularly detrimental to human health and to this end the UK Government (Clean Air Strategy, 2019) aim to ensure that public exposure to $PM_{2.5}$ concentrations above 10 µg/m^3 is halved by 2025.

Table 1: The Air Quality Standards and Objectives for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Averaging Period	Concentration
NO_2	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3
$PM_{2.5}$	Annual Mean	25 µg/m^3

The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the Local Air Quality Management Technical Guidance (Defra, 2021). The annual mean NO_2 and PM_{10} objectives should apply at the building façades of residential properties, schools, hospitals, care homes etc.; they should not apply at the building façades of places of work, hotels, gardens or kerbside sites.

The 24-hour mean PM_{10} objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels. The 1-hour mean NO_2 objective should apply at all locations where the annual and 24-hour mean objectives apply, as well as at kerbside sites where the public have regular access.

It is widely accepted that there is no safe level for $PM_{2.5}$ and The Environment Act 2021 requires the Regulations to be updated to include a more stringent long-term air quality target by the 31st of October 2022. A consultation on new environmental targets was opened on 16th March 2022, which proposes an Annual Mean Concentration Target for England of 10 $\mu g/m^3$, to be met by 2040.

NATIONAL PLANNING POLICY

The National Planning Policy Framework (NPPF) (DCLG, 2021) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced.

Planning law requires that applications for planning permission be determined in accordance with the development plan unless material considerations indicate otherwise. The NPPF must be taken into account in preparing the development plan and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements.

The purpose of the planning system is to contribute to the achievement of sustainable development. In summary the framework advises:

"THE PLANNING SYSTEM SHOULD CONTRIBUTE TO CONSERVING AND ENHANCING THE ENVIRONMENT AND REDUCING POLLUTION BY: PREVENTING BOTH NEW AND EXISTING DEVELOPMENT FROM CONTRIBUTING TO OR BEING PUT AT UNACCEPTABLE RISK FROM, OR BEING ADVERSELY AFFECTED BY UNACCEPTABLE LEVELS OF SOIL, AIR, WATER OR NOISE POLLUTION OR LAND INSTABILITY."

"TO PREVENT UNACCEPTABLE RISKS FROM POLLUTION AND LAND INSTABILITY, PLANNING POLICIES AND DECISIONS SHOULD ENSURE THAT NEW DEVELOPMENT IS APPROPRIATE FOR ITS LOCATION. THE EFFECTS (INCLUDING CUMULATIVE EFFECTS) OF POLLUTION ON HEALTH, THE NATURAL ENVIRONMENT OR GENERAL AMENITY, AND THE POTENTIAL SENSITIVITY OF THE AREA OR PROPOSED DEVELOPMENT TO ADVERSE EFFECTS FROM POLLUTION, SHOULD BE TAKEN INTO ACCOUNT."

"PLANNING POLICIES SHOULD SUSTAIN COMPLIANCE WITH AND CONTRIBUTE TOWARDS EU LIMIT VALUES OR NATIONAL OBJECTIVES FOR POLLUTANTS, TAKING INTO ACCOUNT THE PRESENCE OF AIR QUALITY MANAGEMENT AREAS AND THE CUMULATIVE IMPACTS ON AIR QUALITY FROM INDIVIDUAL SITES IN LOCAL AREAS. PLANNING DECISIONS SHOULD ENSURE THAT ANY NEW DEVELOPMENT IN AIR QUALITY MANAGEMENT AREAS IS CONSISTENT WITH THE LOCAL AIR QUALITY ACTION PLAN."

The NPPF is supported by the Planning Practice Guidance (PPG) (DCLG, 2014):

"THE DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS CARRIES OUT AN ANNUAL NATIONAL ASSESSMENT OF AIR QUALITY USING MODELLING AND MONITORING TO DETERMINE COMPLIANCE WITH RELEVANT LIMIT VALUES. IT IS IMPORTANT THAT THE POTENTIAL IMPACT OF NEW DEVELOPMENT ON AIR QUALITY IS TAKEN INTO ACCOUNT WHERE THE NATIONAL ASSESSMENT INDICATES THAT RELEVANT LIMITS HAVE BEEN EXCEEDED OR ARE NEAR THE LIMIT, OR WHERE THE NEED FOR EMISSIONS REDUCTIONS HAS BEEN IDENTIFIED.

THE LOCAL AIR QUALITY MANAGEMENT (LAQM) REGIME REQUIRES EVERY LOCAL AUTHORITY TO REGULARLY REVIEW AND ASSESS AIR QUALITY IN THEIR AREAS. AIR QUALITY IS A DEVOLVED MATTER, AND FOR ENGLAND THESE REVIEWS IDENTIFY WHETHER NATIONAL OBJECTIVES IN THE AIR QUALITY (ENGLAND) REGULATIONS 2000 HAVE BEEN, OR WILL BE, ACHIEVED BY AN APPLICABLE DATE.

IF NATIONAL OBJECTIVES ARE NOT MET, OR AT RISK OF NOT BEING MET, THE LOCAL AUTHORITY CONCERNED MUST DECLARE AN AIR QUALITY MANAGEMENT AREA AND PREPARE AN AIR QUALITY ACTION PLAN. THIS IDENTIFIES MEASURES THAT WILL BE INTRODUCED IN PURSUIT OF THE OBJECTIVES AND CAN HAVE IMPLICATIONS FOR PLANNING.

AIR QUALITY CONSIDERATIONS MAY ALSO BE RELEVANT TO OBLIGATIONS AND POLICIES RELATING TO THE CONSERVATION OF NATIONALLY AND INTERNATIONALLY IMPORTANT HABITATS AND SPECIES. THE AIR POLLUTION INFORMATION SYSTEM AND NATURAL ENGLAND'S 'IMPACT RISK ZONES' TOOL (AVAILABLE ON MAGIC) CAN HELP TO DETERMINE THE TYPES OF DEVELOPMENT PROPOSAL WHICH CAN ADVERSELY AFFECT THESE DESIGNATED SITES OF SPECIAL SCIENTIFIC INTEREST AND INDICATES WHEN CONSULTATION WITH NATURAL ENGLAND IS REQUIRED.

REGIONAL POLICIES

Under the legislation establishing the Greater London Authority (GLA), the Mayor is required to publish a Spatial Development Strategy (SDS) and keep it under review. The SDS is known as the London Plan. As the overall strategic plan for London, it sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years.

The document brings together the geographical and locational aspects of the Mayor's other strategies, to ensure consistency with those strategies, including those dealing with transport, environment, economic development, housing, culture and health & health inequalities.

Relevant policies are set out below:

Policy GG3 (F) Creating a healthy city:

F SEEK TO IMPROVE LONDON'S AIR QUALITY, REDUCE PUBLIC EXPOSURE TO POOR AIR QUALITY AND MINIMISE INEQUALITIES IN LEVELS OF EXPOSURE TO AIR POLLUTION.

Policy SI 1 Improving air quality

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

C) MAJOR DEVELOPMENT PROPOSALS MUST BE SUBMITTED WITH AN AIR QUALITY ASSESSMENT. AIR QUALITY ASSESSMENTS SHOULD SHOW HOW THE DEVELOPMENT WILL MEET THE REQUIREMENTS OF B1

D) DEVELOPMENT PROPOSALS IN AIR QUALITY FOCUS AREAS OR THAT ARE LIKELY TO BE USED BY LARGE NUMBERS OF PEOPLE PARTICULARLY VULNERABLE TO POOR AIR QUALITY, SUCH AS CHILDREN OR OLDER PEOPLE SHOULD DEMONSTRATE THAT DESIGN MEASURES HAVE BEEN USED TO MINIMISE EXPOSURE.

C MASTERPLANS AND DEVELOPMENT BRIEFS FOR LARGE-SCALE DEVELOPMENT PROPOSALS SUBJECT TO AN ENVIRONMENTAL IMPACT ASSESSMENT SHOULD CONSIDER HOW LOCAL AIR QUALITY CAN BE IMPROVED ACROSS THE AREA OF THE PROPOSAL AS PART OF AN AIR QUALITY POSITIVE APPROACH. TO ACHIEVE THIS A STATEMENT SHOULD BE SUBMITTED DEMONSTRATING:

1) HOW PROPOSALS HAVE CONSIDERED WAYS TO MAXIMISE BENEFITS TO LOCAL AIR QUALITY, AND

2) WHAT MEASURES OR DESIGN FEATURES WILL BE PUT IN PLACE TO REDUCE EXPOSURE TO POLLUTION, AND HOW THEY WILL ACHIEVE THIS.

D IN ORDER TO REDUCE THE IMPACT ON AIR QUALITY DURING THE CONSTRUCTION AND DEMOLITION PHASE DEVELOPMENT PROPOSALS MUST DEMONSTRATE HOW THEY PLAN TO COMPLY WITH THE NON-ROAD MOBILE MACHINERY LOW EMISSION ZONE AND REDUCE EMISSIONS FROM THE DEMOLITION AND CONSTRUCTION OF BUILDINGS FOLLOWING BEST PRACTICE GUIDANCE.147

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

The London Plan is supported by the Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance (GLA, 2014b), which sets out the requirements for dust risk assessments for all developments in London.

New Draft London Plan Air Quality Positive Guidance (GLA, 2021) and Draft Air Quality Neutral Guidance (GLA, 2021) have been published for consultation. This assessment has adopted the draft Air Quality Neutral guidance and demonstrates the Air Quality Positive nature of the development.

The London Environment Strategy (GLA, 2018) outlines the actions that the Mayor will take to improve air quality in London, with the aim of achieving compliance with the EU limit values as soon as possible. The Strategy includes several measures to improve air quality, including those that encourage the use of sustainable transport modes, promote the use of cleaner vehicles, improve traffic management and use the planning process to improve air quality.

LOCAL POLICY- LONDON BOROUGH OF HILLINGDON

The main source of pollution in Hillingdon is emissions from road traffic.

Other significant sources of air pollution are industrial and construction sites, residential and commercial gas use, and emissions from outside of the borough.

LBH declared an Air Quality Management Area (AQMA) on 1st September 2003, due to annual mean NO_2 concentrations not meeting the national air quality objectives in many parts of the borough.

The AQMA covers the area from the southern boundary, north to the border defined by the A40 corridor from the western borough boundary, east to the intersection with Yeading Brook and north until its intersection with the Chiltern-Marylebone railway line.

The proposed development is located within the AQMA.

HILLINGDON AIR QUALITY ACTION PLAN

LBH's Air Quality Action Plan (2019) outlines the Council's commitment to improving air quality in the Borough, including prioritising the following actions:

- 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; and
- Raise awareness via targeted campaigns.

HILLINGDON LOCAL PLAN

The Hillingdon Local Plan: Part 2 (2020) sets out strategic objectives and policies for development in the Borough. Policy DMEI 14 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 DMEI 1 (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.

ASSUMPTIONS & LIMITATIONS

This review is to assess if air quality is a constraint to the development of the site, as proposed.

Where limited access or information is available, assumptions have been made which may affect the conclusions reached in this report. The report provided is solely for the use of the client and no liability to anyone else is accepted and this report is based upon and subject to the scope of work set out in Love Design Studio's quotation and standard terms and conditions.

ASSESSMENT METHODOLOGY

The scope of the assessment is as follows:

- Review of existing air quality.
- Assessment of impact of the proposed development on local air quality during the construction phase.
- Assessment of impact of the proposed development on local air quality during the operational phase.
- Assessment of exposure of future occupants of the proposed development to poor air quality.

EXISTING AIR QUALITY

A review of existing air quality in the area around the proposed development has been undertaken using data from the following sources:

- The London Borough of Hillingdon's Annual Air Quality Status Reports (ASR)
- The London Air Quality Network (https://www.londonair.org.uk); and
- Defra UK Air Pollution Background Concentration Maps.

LBH currently monitor pollutant concentrations automatically at eleven locations in the borough. The nearest automatic monitoring site to the proposed development is HIL5 (Hillingdon Hayes), which measures NOx, NO_2 and PM_{10} concentrations 1.5m from the kerb of North Hyde Road. The nearest automatic monitoring sites measuring urban background pollutant concentrations are HIL4 (London Harmondsworth Osiris) and SIPS (Hillingdon Sipson). Details of these sites are summarised in Table 2. The monitoring locations, relative to the proposed development are presented in Figure 3.

Table 2: Automatic Monitoring Sites

Site ID	Site Name	X (m)	Y (m)	Site Type	Pollutants Monitored
HIL4	London Harmondsworth Osiris	505671	177605	Urban Background	PM_{10}, $PM_{2.5}$
HIL5	Hillingdon Hayes	510303	178882	Roadside	NO_2, PM_{10}
SIPS	Hillingdon Sipson	507325	177282	Urban Background	NO_2

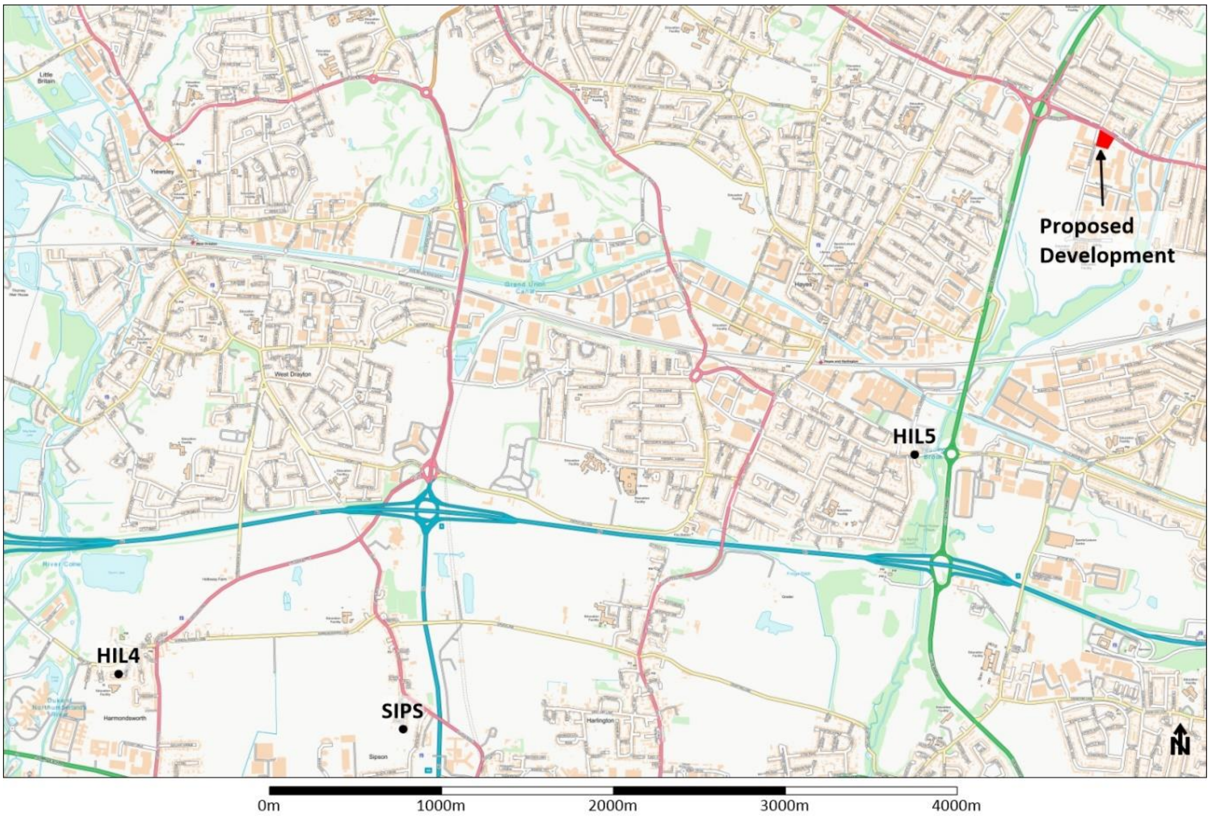

Figure 3: Automatic Monitoring Sites (Contains Ordnance Survey data © Crown copyright and database right 2022)

A summary of concentrations measured at these locations between 2015 and 2019 is presented in Table 3. Data for 2020 and 2021 have not been included due to the influence of the Covid-19 pandemic on traffic levels. The data have been obtained from the LBH Air Quality Status Report (2019) and Air Quality England (https://www.airqualityengland.co.uk/).

The data indicates that the annual mean air quality objective for NO_2 of 40 µg/m^3 is consistently exceeded at HIL5, however a decline in concentrations is evident in 2018 and 2019. At the SIPS urban background site, the measured concentrations are considerably lower and well within the objective.

The number of hourly mean NO_2 concentrations over 200 µg/m^3 measured at both HIL5 and SIPs were well below the 18 allowable within the objective.

The measured annual mean PM_{10} concentrations at the HIL4 urban background site were less than 50% of the air quality objective of 40 µg/m^3 during the 5 year period, however at the HIL5 roadside site, the concentrations were considerably higher at approximately 75% of the objective. The number of 24-hour mean PM_{10} concentrations above 50 µg/m^3 was below the 35 allowable within the objective at both sites. There is no evidence of a significant decline in PM_{10}concentrations at either location.

Data from HIL4 indicates that urban background annual mean $PM_{2.5}$ concentrations are within the current air quality objective of 25 µg/m³, and also below the proposed new Concentration Target of 10 µg/m³.

Table 3: Ratified Automatic Monitoring Data

Statistic	2015	2016	2017	2018	2019	Air Quality Objective
London Harmondsworth Osiris (HIL4)						
Annual Mean PM_{10} (µg/m³)	17	16	14	16	14	40
PM_{10} Number of 24-hour means > 50 µg/m³	17	0	1	0	1	35
Annual Mean $PM_{2.5}$ (µg/m³)	7	6	7	6	9	25
Hillingdon Hayes (HIL5)						
Annual Mean NOx (µg/m³)	102	121	113	95	94	-
Annual Mean NO_2 (µg/m³)	**46**	**46**	**47**	**43**	**41**	40
NO_2 Number of 1-hour means > 200 µg/m³	2	1	12	0	0	18
Annual Mean PM_{10} (µg/m³)	28	28	27	30	28	40
PM_{10} Number of 24-hour means > 50 µg/m³	14	32	26	0	25	35
Hillingdon Sipson (SIPS)						
Annual Mean NOx (µg/m³)	55	70	64	49	50	-
Annual Mean NO_2 (µg/m³)	34	35	34	30	30	40
NO_2 Number of 1-hour means > 200 µg/m³	3	0	0	0	0	18

Notes:

(a) Exceedances of the objectives are shown in bold.

Annual mean NO_2 concentrations are also measured by LBH via an extensive network of passive diffusion tubes; a summary of the monitoring sites that are considered relevant to the assessment is presented in Table 4. The table includes a diffusion tube on Uxbridge Road, within the London Borough of Ealing (LBE), which may provide an indication of existing concentrations at the proposed development. The locations of the diffusion tubes are presented in Figure 4.

Table 4: Details of Non-Automatic Monitoring (Diffusion Tube) Monitoring Sites

Site ID	Site Name	X (m)	Y (m)	Site Type
EA13	11 The Broadway, Southall, UB1 3PX	512768	180400	Roadside
HILL17	49 Silverdale Gardens, Hayes Lamp Post (8)	510361	179820	Urban Background
HILL18	Blyth Road, Hayes Lamp Post (4)	509683	179486	Roadside
HILL27	Botwell House RC Primary School	509755	179934	Roadside
HILL28	Blyth Road 2nd Tube, Hayes Lamp Post (17)	509328	179603	Roadside
HD208	Side of 50 St. Christopher's Drive Lamp Post (13)	510761	180766	Urban Background

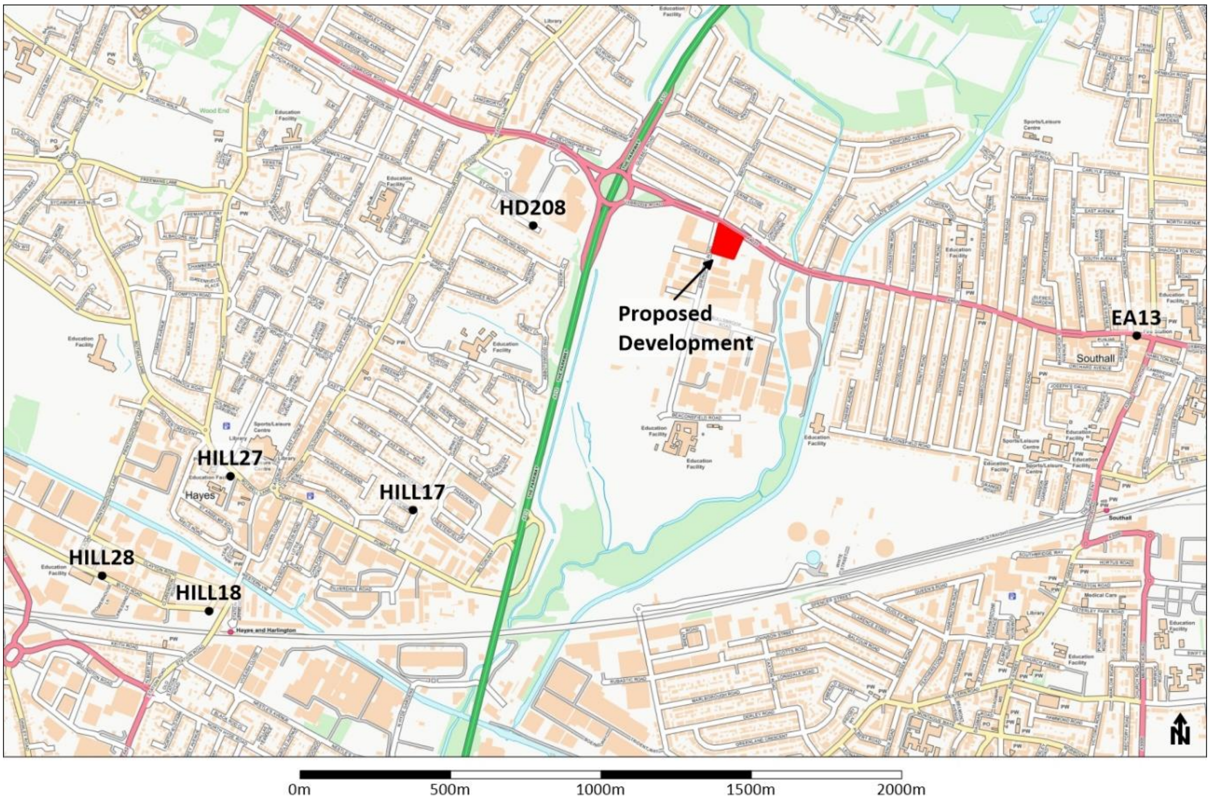

Figure 4: Diffusion Tube Monitoring Sites (Contains Ordnance Survey data © Crown copyright and database right 2022)

The diffusion tube data, presented in Table 5, show that there are ongoing exceedances of the annual mean NO_2 objective of 40 μg/m^3 at EA13, which is adjacent to the A4020. On this basis, there is also the potential for an exceedance of the objective at the proposed development site. However, the proposed development is a hotel and therefore, in accordance with LAQM.TG16, the annual mean objectives do not apply. Diffusion tubes are unable to provide short-term NO_2 concentrations, however measurements across the UK have shown that an exceedance of the 1-hour mean AQO for NO_2 is unlikely where the annual mean concentration is less than 60 µg/m³ (Laxen and Barner, 2003). On this basis, it is unlikely that there will be an exceedance of the short-term objective at the proposed development.

At all other locations, the measured annual mean NO_2 concentrations were below the objective in 2018 and 2019. There is no clear trend within the data to suggest with any certainty that NO_2 concentrations in the area are declining.

The NO_2 concentrations measured at the two background diffusion tubes in the area in good agreement with the concentrations measured at the SIPS automatic site, and are well within the air quality objective (approximately 75%).

Table 5: Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results (µg m-³) (a)

Site ID	Site Type	Annual Mean Concentration (µg/m³)				
		2015	**2016**	**2017**	**2018**	**2019**
EA13	Roadside	**53.5**	**52.7**	**45.1**	**46.0**	**44.3**
HILL17	Urban Background	26.7	26.1 (b)	32.7	31.0	31.6 (c)
HILL18	Roadside	**41.9**	**40.9** (c)	**49.0**	38.5	37.4 (c)
HILL27	Roadside	30.7	30.8	33.8	32.5	33.2 (c)
HILL28	Roadside	32.1	32.3	35.7	31.7	32.6 (c)
HD208	Urban Background	27.3	28.9	27.3	30.8 (c)	-

Notes:

(a) Exceedances of the NO_2 annual mean AQO of 40 µg m⁻³ are shown in bold.
(b) Data capture < 90%
(c) Data capture ≤ 75%, therefore data has been annualised by LBH.

For comparison with the local monitoring data, annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations have been obtained from the latest Defra background maps. The maps were published in August 2020 and are based on 2018 monitoring data, with projections for future years.

The maximum 2018 (verification year) annual mean background concentrations for the area around the proposed development and verification sites have been derived from contour plots of the mapped data and are presented in Table 6. The mapped concentrations are well within the air quality objectives.

The highest of the mapped or measured 2018 background concentrations have been used in the assessment to predict concentrations in the anticipated opening year of the proposed development (2025). Since a year-on-year decline in background concentrations is expected due to ongoing emissions reductions policies and the increasing uptake of low emission/ electric vehicles, this is considered a conservative approach.

Table 6: Annual Mean Mapped and Measured 2018 Background Pollutant Concentrations (µg/m^3)

Pollutant	Mapped	Maximum Measured	Assessment Value	Air Quality Objective
NOx	48.7	49.0	49.0	-
NO_2	28.3	31.0	31.0	40
PM_{10}	18.3	16.0	18.3	40
$PM_{2.5}$	12.2	6.0	12.2	25

CONSTRUCTION PHASE IMPACTS

Potential impacts on air quality may arising during the construction phase from the following sources:

- Emissions of NOx, PM_{10} and $PM_{2.5}$ from construction traffic;
- Emissions from on-site non road mobile machinery (NRMM); and
- Emissions of dust from on-site activities, including re-suspended dust from vehicle movements.

Traffic Emissions

The Environmental Protection UK (EPUK)/ Institute of Air Quality Management (IAQM) planning guidance (IAQM & EPUK, 2017) provide screening criteria for potential impacts on local air quality. It states that for developments within an AQMA, a detailed assessment of traffic-related impacts is required where:

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

Where none of these criteria are met, the impact on local air quality is unlikely to be significant.

The proposed development is expected to generate 14 HGV trips per day (AADT) during the construction phase, which is well below the screening threshold. The impact of the construction traffic on local air quality is therefore expected to be negligible.

Non-Road Mobile Machinery Emissions

All non-road mobile machinery (NRMM) will comply with the emission standards specified in London Plan SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014b).

On this basis, the impact of the NRMM emissions on local air quality is expected to be negligible.

Dust Emissions

A construction dust risk assessment has been undertaken in accordance with the London Plan SPG on The Control of Dust and Emissions During Construction and Demolition, which utilises the methodology in the IAQM Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014).

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

- 350m of the site boundary; or
- 50m of the route(s) used by construction vehicles on public roads, up to 500m from the site entrance(s).

For ecological impacts, a detailed assessment is required if there are dust sensitive habitat sites within

- 50m of the site boundary; or
- 50m of the route(s) used by construction vehicles on public roads, up to 500m from the site entrance(s).

A map showing receptors within 20, 50, 100, 200 and 350m of the proposed development is presented in Figure 5. The proposed development is in an urban area with a large number of receptors within 350m of the site, that have the potential to be affected by dust generated during the construction phase. A detailed assessment of potential impacts is therefore required. There are no dust sensitive habitat sites within 50m of the site, therefore ecological impacts have not been assessed.

The methodology assesses the potential risk of dust soiling and human health effects, based primarily on the sensitivity and proximity of nearby receptors and the anticipated magnitude of the dust emission due to:

- Demolition;
- Earthworks;
- Construction; and
- Track-out (re-suspended dust from vehicle movements).

The assessment 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.

The risk of dust soiling impacts depends on the proximity and sensitivity of the nearest receptors to the proposed construction works. Residential properties, school and hospitals are of particularly high sensitivity to dust effects. The nearest residential properties to the proposed development are on the opposite side of Uxbridge Road, approximately 35m from the site boundary. It is estimated that there are 12 properties within 50m of the site and less than 50 within 100m. The other surrounding land-uses are light industrial/commercial and of low to medium sensitivity to dust impacts. In accordance with the guidance, the sensitivity of the area to dust soiling impacts is considered to be 'medium'.

The potential impact of dust emissions on human health depends on existing airborne particulate concentrations, such that there is a greater risk of an exceedance of the air quality objectives in areas with elevated concentrations. The mapped background data indicates that existing PM_{10} concentrations in are likely to be below 24 $\mu g/m^3$ and therefore the sensitivity of the area to human health impacts is also 'low'.

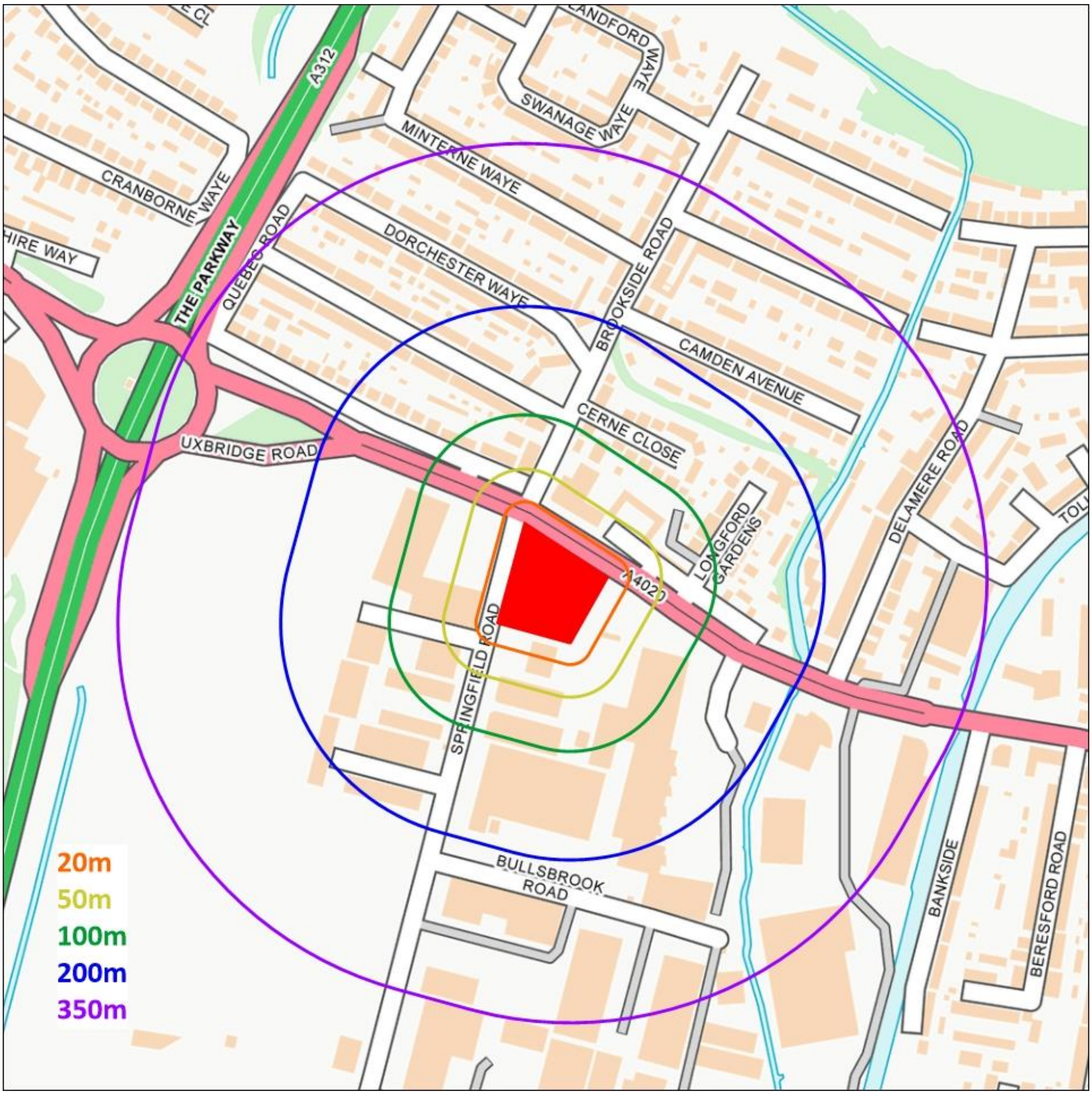

Figure 5: Dust Risk Assessment Buffers

The magnitude of the likely dust emission from demolition, earthworks, construction and trackout, has been evaluated using the guidance and is summarised in Table 7.

Table 7: Dust Emission Magnitude

Dust Source	Proposed Development	Dust Emission Magnitude
Demolition	The majority of the existing hotel building will be retained with internal refurbishment. The volume of the buildings to be demolished is 4,350m3. The structures are a maximum of 7.2 m high. Crushing and screening of the demolition material will be undertaken, however based on the scale of the works, the emission magnitude is expected to be 'medium' rather than 'large'.	Medium
Earthworks	The whole site is 5,700m^2 (including the retained hotel area) and therefore there is unlikely to be sufficient space for more than 1-2 earth moving vehicles or large stockpiles of material. However, the soil type may be dusty, and it cannot be guaranteed that the works will be undertaken during wetter months.	Medium
Construction	The total construction volume is 45,000m^3. The construction materials will include brick and concrete, which are potentially dusty. Piling will be undertaken on site, however there will be no sandblasting or concrete batching.	Medium
Trackout	There will be less than 10 outward HDV movements per day. There will be limited vehicular access over unmade ground.	Small

A summary of the potential risk of dust impacts, prior to mitigation, based on the 'low' and 'medium' sensitivity of the area to health and dust soiling impacts, respectively, is presented in Table 8. Overall, the risk of dust impacts during the construction phase, prior to mitigation, is assessed as 'medium'.

Table 8: Risk of Dust Impacts Prior to Mitigation

Dust Source	Risk of Human Health Impacts	Risk of Dust Soiling Impacts	Overall Risk
Demolition	Low	Medium	Medium
Earthworks	Low	Medium	Medium
Construction	Low	Medium	Medium
Trackout	Negligible	Low	Low
Overall risk of dust impacts, prior to mitigation			Medium

OPERATIONAL PHASE IMPACTS

Potential impacts on air quality may arising during the operational phase from the following sources:

- Emissions of NOx, PM_{10} and $PM_{2.5}$ from operational traffic; and
- Building-related emissions from on-site combustion sources (e.g., gas boilers).

Traffic Emissions

The existing and proposed HDV and LDV AADT flows for the proposed development have been supplied by the traffic consultants and are presented in Table 9.

Table 9: Existing and Proposed AADT Trip Generation

Scenario	LDV	HDV	Total
Existing	549	28	577
Proposed	478	206	684
Change	-71	+178	+107

The proposed development will reduce the number of LDV trips associated with the site, however the number of HDV trips will increase by 178. This is above the IAQM/EPUK screening threshold of 25 AADT and therefore a detailed assessment is required to assess potential impacts on local air quality.

The vast majority (144 AADT) of the HDV trips will be associated with minibus shuttles to Hayes and Harlington Station. The remaining trips (34 AADT) will be associated with the light industrial uses and deliveries/servicing. The expected distribution of the HDV trips on the local road network is presented in Table 10.

All of the road links within the Table are scoped into the detailed assessment with the exception of Uxbridge Road (east of Springfield Road), where the increase in HDV trips is below the IAQM/EPUK threshold.

Table 10: Distribution of Additional HDV trips

Road Link	HDV (AADT)
Springfield Road	178
Uxbridge Road (west of Springfield Road)	161
Uxbridge Road (east of Springfield Road)	17
A312 The Parkway	150
Bilton Way	144
Pump Lane	144
Station Road	144
Clayton Road (Station Road to Blyth Road)	144
Blyth Road	72
Clarendon Road	72
Clayton Road (Clarendon Road to Blyth Road)	72

Detailed dispersion modelling of emissions from traffic on the affected road links has been undertaken using ADMS-Roads, to predict concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptor locations in the expected opening year of the development (2025). Traffic flows have been obtained from the Department of Transport (DfT) automatic traffic count (ATC) data and the London Atmospheric Emissions Inventory (LAEI). A TEMPro growth factor has been applied to the data to account for the potential increase in baseline traffic to the assessment year.

A summary of the model input parameters and traffic data is presented in **Appendix B**.

The modelled NOx and PM_{10} concentrations have been verified using 2018 data from a number of monitoring sites in the area. Full details of the verification process are provided in **Appendix C**.

Worst-case sensitive receptor locations have been identified on each road link (those that are closest to the carriageway). Where appropriate, street canyon effects have been included in the model. Details of the sensitive receptors and their locations are presented Table 11 and Figure 6, respectively. Unless otherwise indicated, pollutant concentrations have been predicted at ground-floor (GF) level (assuming an exposure height of 1.5m above road level). Where there is possible residential above a commercial premises, pollutant concentrations have also been predicted at first-floor (F1) level (4.5m above road level). Street canyons have been included in the model on Station Road, Blyth Road and Clayton Road, affecting receptors 7, 11, 12 and 13.

Table 11: Sensitive Receptor Details

ID	Location	Type	Easting	Northing
1	156 Uxbridge Road	Residential	511287	180857
2	Avondale Drive	Residential	510777	180063
3	Bilton Way	Commercial	510561	179616
4	Hayes Working Men's Club	Leisure	510257	179715
5	38 Little Road	Residential	510022	179815
6	12 Coldharbour Lane	GF Commercial F1 Residential	509913	179879
7	44 Station Road	GF Commercial F1 Residential	509811	179723
8	58 Station Road	GF Commercial F1 Residential	509794	179642
9	Apartment Building, Station Road	GF Commercial F1 Residential	509783	179549
10	2 Clayton Road	GF Commercial F1 Residential	509725	179549
11	7 Clayton Road	GF Commercial F1 Residential	509703	179578
12	1 Blyth Road	Residential	509687	179498
13	Bluenote Apartments, Blyth Road	Residential	509561	179491
14	3 Clarendon Road	Residential	509555	179548
15	66 Clayton Road	Residential	509557	179600
16	24 Clayton Road	Residential	509660	179567

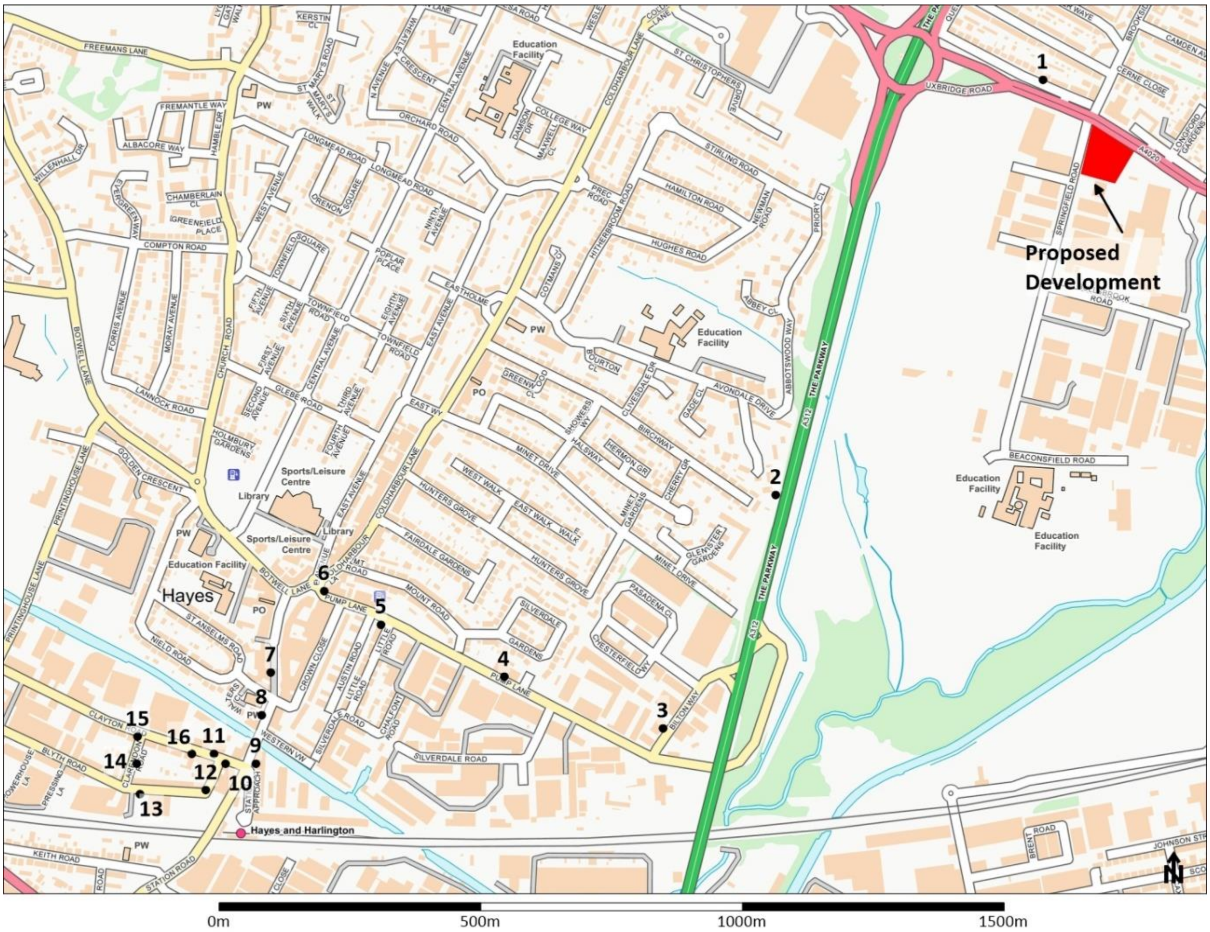

Figure 6: Sensitive Receptor Locations (Contains Ordnance Survey data © Crown copyright and database right 2022)

The potential effect of the additional HDV movements on local air quality has been evaluated in accordance with the IAQM/EPUK planning guidance (2017). The impact is dependent on both the change in the annual mean concentration and existing air quality, relative to the Air Quality Assessment Level (AQAL). In this case, the relevant AQAL's are the annual mean air quality objectives for NO_2, PM_{10} and $PM_{2.5}$. A summary of the impact descriptors for individual receptors is presented in Table 12.

Table 12: Impact Descriptors

Annual Mean Concentration at Receptor	% Change in Concentration Relative to AQAL			
	1	**2 - 5**	**6 - 10**	**>10**
<75% of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
>100% of AQAL	Moderate	Substantial	Substantial	Substantial

The criteria are intended to be used by rounding the percentage change in concentrations to a whole number. Changes of less than 0.5% (i.e., 0%) are described as 'Negligible'.

The significance of the impact is a matter of professional judgement, taking into account:

- Existing and future air quality in the absence of the development;
- The number of receptors affected by the impacts; and
- The limitations of the assessment process.

In general, when a single development is assessed in isolation, 'Negligible' and 'Slight' impacts give rise to an insignificant effect, whereas 'Moderate' and 'Substantial' impacts are considered significant.

The predicted 2025 (opening year) annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at the identified sensitive receptors, without (Do Nothing) and with the development (Do Something) are presented in Table 13, Table 14 and Table 15.

The predicted concentrations are below the annual mean air quality objectives for NO_2, PM_{10} and $PM_{2.5}$ and the predicted impact at all receptors is negligible. The effect of the additional HDV movements on local air quality is therefore predicted to be insignificant.

Table 13: Predicted 2025 NO_2 Concentrations at Sensitive Receptors

ID	Type	Level	Do Nothing	Do Something	Change (% AQAL)	Impact
1	Residential	Ground	32.8	32.8	0%	Negligible
2	Residential	Ground	35.2	35.2	0%	Negligible
3	Commercial	Ground	32.9	33.0	0%	Negligible
4	Leisure	Ground	33.4	33.5	0%	Negligible
5	Residential	Ground	32.7	32.7	0%	Negligible
6	Commercial	Ground	35.9	36.1	0%	Negligible
	Residential	First	34.0	34.1	0%	Negligible
7	Commercial	Ground	37.6	37.9	1%	Negligible
	Residential	First	35.0	35.1	0%	Negligible
8	Commercial	Ground	35.7	35.9	0%	Negligible
	Residential	First	33.8	33.9	0%	Negligible
9	Commercial	Ground	34.9	35.0	0%	Negligible
	Residential	First	33.7	33.9	0%	Negligible
10	Commercial	Ground	35.0	35.3	1%	Negligible
	Residential	First	33.4	33.6	1%	Negligible
11	Commercial	Ground	33.8	34.0	1%	Negligible
	Residential	First	32.7	32.8	0%	Negligible
12	Residential	Ground	35.0	35.7	2%	Negligible
13	Residential	Ground	35.6	36.4	2%	Negligible
14	Residential	Ground	32.8	33.0	0%	Negligible
15	Residential	Ground	33.5	33.6	0%	Negligible
16	Residential	Ground	34.9	35.1	1%	Negligible

Table 14: Predicted 2025 PM_{10} Concentrations at Sensitive Receptors

ID	Type	Level	Do Nothing	Do Something	Change (% AQAL)	Impact
1	Residential	Ground	18.9	18.9	0%	Negligible
2	Residential	Ground	20.3	20.3	0%	Negligible
3	Commercial	Ground	19.0	19.0	0%	Negligible
4	Leisure	Ground	19.2	19.2	0%	Negligible
5	Residential	Ground	18.9	18.9	0%	Negligible
6	Commercial	Ground	19.8	19.8	0%	Negligible
	Residential	First	19.1	19.1	0%	Negligible
7	Commercial	Ground	20.0	20.0	0%	Negligible
	Residential	First	19.3	19.3	0%	Negligible
8	Commercial	Ground	19.5	19.5	0%	Negligible
	Residential	First	19.0	19.0	0%	Negligible
9	Commercial	Ground	19.3	19.3	0%	Negligible
	Residential	First	19.0	19.0	0%	Negligible
10	Commercial	Ground	19.3	19.4	0%	Negligible
	Residential	First	18.9	18.9	0%	Negligible
11	Commercial	Ground	19.0	19.1	0%	Negligible
	Residential	First	18.7	18.7	0%	Negligible
12	Residential	Ground	19.2	19.2	0%	Negligible
13	Residential	Ground	19.3	19.4	0%	Negligible
14	Residential	Ground	18.8	18.8	0%	Negligible
15	Residential	Ground	19.0	19.0	0%	Negligible
16	Residential	Ground	19.3	19.4	0%	Negligible

Table 15: Predicted 2025 $PM_{2.5}$ Concentrations at Sensitive Receptors

ID	Type	Level	Do Nothing	Do Something	Change (% AQAL)	Impact
1	Residential	Ground	12.6	12.6	0%	Negligible
2	Residential	Ground	13.3	13.3	0%	Negligible
3	Commercial	Ground	12.6	12.6	0%	Negligible
4	Leisure	Ground	12.7	12.7	0%	Negligible
5	Residential	Ground	12.5	12.5	0%	Negligible
6	Commercial	Ground	13.0	13.1	0%	Negligible
	Residential	First	12.7	12.7	0%	Negligible
7	Commercial	Ground	13.1	13.2	0%	Negligible
	Residential	First	12.8	12.8	0%	Negligible
8	Commercial	Ground	12.9	12.9	0%	Negligible
	Residential	First	12.6	12.6	0%	Negligible
9	Commercial	Ground	12.7	12.8	0%	Negligible
	Residential	First	12.6	12.6	0%	Negligible
10	Commercial	Ground	12.8	12.8	0%	Negligible
	Residential	First	12.5	12.5	0%	Negligible
11	Commercial	Ground	12.6	12.6	0%	Negligible
	Residential	First	12.4	12.5	0%	Negligible
12	Residential	Ground	12.7	12.7	0%	Negligible
13	Residential	Ground	12.8	12.8	0%	Negligible
14	Residential	Ground	12.5	12.5	0%	Negligible
15	Residential	Ground	12.6	12.6	0%	Negligible
16	Residential	Ground	12.8	12.8	0%	Negligible

Building Emissions

The energy strategy for the new proposed development is 100% electric and therefore there will be no additional on-site combustion emissions from the new development areas.

EXPOSURE ASSESSMENT

The London Councils Air Quality Planning Guidance (GLA,2007) 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 16. The applicable ranges assume a downward trend in pollutant concentrations has been established.

The potential exposure of future occupants of the proposed development to poor air quality and the requirement for mitigation has been evaluated in accordance with these criteria.

Table 16: Air Pollution Exposure Criteria

Category	Applicable Range NO_2	Applicable Range PM_{10}	Recommendation
APEC-A	Annual mean: > 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	Annual Mean: 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	Annual Mean: > 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.

Ground-Floor level concentrations have been predicted over the full extent of the proposed development using a Cartesian receptor grid of 5m resolution.

Predicted NO_2 Concentrations

Predicted 2025 ground-floor level annual mean NO_2 concentrations at the proposed development are presented in Figure 7.

The highest concentrations are predicted at the roadside façade at just under 36 µg/m^3 (exposure category APEC-A).

The proposed development is a hotel and therefore there will be no long-term exposure on site. The predicted ground-floor level annual mean NO_2 concentrations are well below the 60 µg/m^3 threshold for a potential exceedance of the short-term air quality objective and therefore the risk of non-compliance at the proposed development is negligible.

Figure 7: Predicted Ground-Floor Level Annual Mean NO_2 Concentrations (µg/m^3)

Predicted PM_{10} and $PM_{2.5}$ Concentrations

Predicted 2024 annual mean ground-floor level PM_{10} and $PM_{2.5}$ concentrations at the proposed development are presented in Figure 8 and Figure 9, respectively. The concentrations are well below the relevant air quality objectives at the façade of the new building.

The Local Air Quality Management Technical Guidance (Defra, 2021) provides a relationship between predicted annual mean PM_{10} concentrations and the likely number of exceedances of the short-term (24-hour mean) PM_{10} objective of 50 μg/m^3. The objective allows 35 exceedances per year, which is equivalent to an annual mean of 32 μg/m^3. The maximum predicted PM_{10} concentration at the proposed development is less than 20 μg/m^3, therefore the dispersion modelling indicates that compliance with the short term PM_{10} objective will be achieved at all locations on site.

The maximum predicted $PM_{2.5}$ concentration at a building facade is 52% of the current exposure reduction target of 25 μg/m^3, but is above the proposed concentration target of 10 μg/m^3. However, 93% of the maximum predicted concentration at the facade of the building is attributable to the existing background $PM_{2.5}$ concentration (12.2 μg/m^3).

Figure 8: Predicted Ground-Floor Level Annual Mean PM_{10} Concentrations (µg/m^3)

Figure 9: Predicted Ground-Floor Level Annual Mean $PM_{2.5}$ Concentrations (μg/m³)

AIR QUALITY NEUTRAL ASSESSMENT

An air quality neutral assessment has been undertaken in accordance with the Draft London Plan Air Quality Neutral Guidance (GLA, 2021).

Benchmarks have been developed for buildings and transport, which are dependent on the location of the proposed development (Central Activities Zone (CAZ), Inner London, Outer London) 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 off-set through appropriate mitigation measures or a financial contribution.

BUILDING RELATED EMISSIONS

The energy strategy for the proposed development is 100% electric and therefore there are no additional emissions associated with the site. The proposed development is therefore Air Quality Neutral with respect to building-related emissions.

TRANSPORT RELATED EMISSIONS

The air quality neutral assessment for transport-related emissions compares the trips generated by the development with benchmarked trip rates which are dependent on the land-use type.

It should be noted that the benchmarks only apply to car and light van trips generated by the development. Taxi's, deliveries, servicing and HDV trips from the operation of industrial and commercial premises are excluded.

The benchmarked trip rates for the proposed development are presented in Table 17.

Table 17: Benchmarked Transport Emissions for Residential Use

Land Use	GIA (m^2)	Benchmark Trip Rate (trips/m^2/annum)	Benchmarked Trips (trips/annum)
Light Industrial	1,318	16	21,088
Hotel	19,054	6.9	131,472
Total			152,561

Taking into account the above exclusions, the proposed development is expected to generate 131 car and LGV vehicle movements per day (47,815 per annum). The development annual trip rate is well below the benchmark and there for the proposed development is Air Quality Neutral with respect to transport-related emissions.

MITIGATION

CONSTRUCTION PHASE

Best practice dust control should be implemented on site in accordance with the GLA guidance which provides 'Highly Recommended (H)' and 'Desirable (D)' mitigation measures, based on the assessed risk of impacts (see Appendix F).

Overall, the site has been assessed as Medium Risk, prior to mitigation. The specific risk of impacts from demolition, earthworks and construction is Medium, however the risk of impacts from trackout has been assessed as Low.

The relevant 'Highly Recommended' and 'Desirable' mitigation measures for the construction phase, based on the assessed risk of impacts, are presented in Table 18 and Table 19, respectively. These measures should be incorporated into the Construction Environmental Management Plan (CEMP) or Dust Management Plan (DMP) for the proposed development.

Table 18: Highly Recommended Mitigation Measures

Category	Measure
Site Management	- 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. - Record and respond to all dust and air quality pollutant emissions complaints. - Make the complaints log available to the local authority when asked. - 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 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. - Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
Preparing and maintaining the site	- 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 at the site boundary that are at least as high as any stockpiles on site.

Category	Measure
	- 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 from site as soon as possible. - Cover, seed or fence stockpiles to prevent wind whipping. - If relevant, put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly. Potentially agree monitoring locations with the Local Authority if required and where possible, commence baseline monitoring at least three months before phase begins.
Operating vehicle/machinery and sustainable travel	- 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. - Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. - 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. - 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. - Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management	- Reuse and recycle waste to reduce dust from waste materials. - Avoid bonfires and burning of waste materials.
Demolition	- Ensure water suppression is used during demolition operations. - Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Category	Measure
	- Bag and remove any biological debris or damp down such material before demolition.
Construction	- 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.

Table 19: Desirable Mitigation Measures

Category	Measure
Preparing and maintaining the site	- Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution. - Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.
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).
Earthworks	- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces. - Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil. - Only remove secure covers in small areas during work and not all at once.
Construction	- Avoid scabbling (roughening of concrete surfaces) if possible. - Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. - For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout	- Use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport. - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

OPERATIONAL PHASE

Predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations at the ground floor of the proposed development are well within the relevant air quality standards (exposure category APEC-A). Operational mitigation measures are therefore not required to protect future occupants from poor air quality.

CONCLUSION

An assessment has been undertaken to determine the potential impact on local air quality associated with the construction and operation of the proposed development on Uxbridge Road, Hayes.

The potential risk of dust impacts during the construction phase has been determined in accordance with the GLA's construction and demolition SPG. Based on the close proximity of existing residential properties to the site boundary and the proposed works, there is a risk of dust impacts, prior to mitigation. However, through the implementation of best practice dust control, the impact of the dust and PM_{10} releases at sensitive receptor locations is expected to be negligible.

The construction works will generate a small number of vehicle trips on the local road network. However, based on the scale of the proposed development, the temporary increase in emissions will not significantly affect local air quality.

The proposed development will result in an additional 178 HDV movements on the local road network. The majority of these trips will be minibuses shuttling hotel guests to and from Hayes and Harlington station. The additional emissions associated with these trips will have a negligible impact on local air quality. The transport-related emissions are air quality neutral.

The energy strategy for the new proposed development is 100% electric and therefore the building-related emissions are air quality neutral.

Detailed dispersion modelling has been undertaken to predict pollutant concentrations at the proposed development in the opening year (2025). The predicted concentrations are well within the long and short-term air quality objectives at the ground-floor façade of the hotel. The proposed development therefore falls within exposure category APEC-A and mitigation is not required on site to protect future occupants from poor air quality.

Following the successful implementation of the recommended construction phase mitigation measures, it is considered that air quality does not pose a constraint to the redevelopment of the site, as proposed.

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APPENDICES

APPENDIX A – CONSTRUCTION DUST RISK ASSESSMENT METHODOLOGY

Factors defining the sensitivity of a receptor to dust impacts are presented in Table 20.

Table 20: Receptor Sensitivity

Sensitivity	Human Health	Dust Soiling	Ecological
High	- Locations where members of the public are exposed over a time period relevant to the air quality objectives for PM_{10} (a) - Examples include residential dwellings, hospitals, schools and residential care homes.	- Regular exposure - High level of amenity expected. - Appearance, aesthetics or value of the property would be affected by dust soiling. - Examples include residential dwellings, museums, medium and long-term car parks and car showrooms.	- Nationally or Internationally designated site with dust sensitive features (b) - Locations with vascular species (c)
Medium	- Locations where workers are exposed over a time period relevant to the air quality objectives for PM_{10} (a) - Examples include office and shop workers (d)	- Short-term exposure - Moderate level of amenity expected. - Possible diminished appearance or aesthetics of property due to dust soiling - Examples include parks and places of work	- Nationally designated site with dust sensitive features (b) - Nationally designated site with a particularly important plant species where dust sensitivity is unknown
Low	- Transient human exposure - Examples include public footpaths, playing fields, parks and shopping streets	- Transient exposure - Enjoyment of amenity not expected. - Appearance and aesthetics of property unaffected - Examples include playing fields, farmland (e), footpaths, short-term car parks and roads	- Locally designated site with dust sensitive features (b)

Notes:

(a) In the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more in a day.
(b) Ecosystems that are particularly sensitive to dust deposition include lichens and acid heathland (for alkaline dust, such as concrete).
(c) Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.
(d) Does not include workers' exposure to PM_{10} as protection is covered by Health and Safety at Work legislation.
(e) Except commercially sensitive horticulture.

Table 21 and Table 22 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 23.

Table 21: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source			
		< 20 m	< 50m	< 100m	<200m
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

Key: H = High, M = Medium, L = Low

Table 22: Sensitivity of the Area to Heath Impacts from Dust

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source			
			< 20 m	< 50m	< 100m	<200m
High	>32	>100	H	H	H	M
		10-100	H	H	M	L
		1-10	H	M	L	L
	28-32	>100	H	H	M	L
		10-100	H	M	L	L
		1-10	H	M	L	L
	24-28	>100	H	M	L	L
		10-100	H	M	L	L
		1-10	M	L	L	L
	<24	>100	M	L	L	L
		10-100	L	L	L	L
		1-10	L	L	L	L
Medium	>32	>10	H	M	L	L

Receptor Sensitivity	Annual Mean PM_{10} Concentration (µg/m^3)	Number of Receptors	Distance from the Source			
			< 20 m	< 50m	< 100m	<200m
		1-10	M	M	L	L
	28-32	>10	M	M	L	L
		1-10	L	L	L	L
	24-28	>10	L	L	L	L
		1-10	L	L	L	L
	<24	>10	L	L	L	L
		1-10	L	L	L	L
Low	-	≥1	L	L	L	L

Table 23: Sensitivity of the Area to Ecological Impacts from Dust

Receptor Sensitivity	Distance from the Source	
	< 20 m	< 50m
High	H	M
Medium	M	L
Low	L	L

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 24.

Table 24: Dust Emission Magnitude

Source	Large	Medium	Small
Demolition	- Total building volume >50,000m³ - Potentially dusty material (e.g., concrete) - Onsite crushing and screening - Demolition activities >20m above ground level.	- Total building volume 20,000 - 50,000m³ - Potentially dusty material - Demolition activities 10 - 20m above ground level.	- Total building volume <20,000m³ - Construction material with low potential for dust release - Demolition activities <10m above ground level - Demolition during wetter months
Earthworks	- Total site area >10,000m² - Potentially dusty soil type (e.g., clay) - >10 heavy earth moving vehicles active at any one time. - Formation of bunds >8m in height - Total material moved >100,000 tonnes	- Total site area 2,500 -10,000m² - Moderately dusty soil type (e.g., silt) - 10 heavy earth moving vehicles active at any one time. - Formation of bunds 4 - 8m in height - Total material moved 20,000 - 100,000 tonnes	- Total site area <2,500m² - Soil type with large grain size (e.g., sand) - <5 heavy earth moving vehicles active at any one time. - Formation of bunds <4m in height - Total material moved <20,000 tonnes. - Earthworks during wetter months
Construction	- Total building volume >100,000m³ - On site concrete batching - Sandblasting	- Total building volume 25,000 - 100,000m³ - Potentially dusty construction	- Total building volume <25,000m³ - Material with low potential for dust release (e.g.,

Source	Large	Medium	Small
		material (e.g., concrete) - On site concrete batching	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	- 10 - 50 HDV movements in any one day (a) - Moderately dusty surface material (e.g., silt) - Unpaved road length 50 - 100m	- <10 HDV movements in any one day (a) - Surface material with low potential for dust release - Unpaved road length <50m

Notes:

(a) HDV 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 Table 25, Table 26 and Table 27.

Table 25: Risk of Dust Impacts from Demolition

Area Sensitivity	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 26: Risk of Dust Impacts from Earthworks and Construction

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

Table 27: Risk of Dust Impacts from Trackout

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

APPENDIX B – MODEL INPUT PARAMETERS

Table 28: Model Input Parameters

Input Parameter	Model Verification (2018)	Impact and Exposure Assessment (2025)
Vehicle Emission Factors	Emissions Factors Toolkit (EFT2021_v11.0) 2018	Emissions Factors Toolkit (EFT2021_v11.0) 2025
Meteorological Dataset	Hourly sequential data for 2018 from Heathrow Airport	
Surface Roughness	1.0	
Monin-Obukhov Length	75m	

Table 29: Traffic Data (2018 Verification)

Road Link	AADT	HDV (%)	Speed (kph) (a)	Comments
The Broadway	29,277	4.3	16	DfT ATC 73446 for 2018
Botwell Lane	5,154	1.2	32	DfT ATC 811102 for 2019 (no 2018 data available)
Blyth Road (west of Clarendon Road)	2,386	2.4	16	DfT ATC 942673 for 2018
Blyth Road (east of Clarendon Road)	5,000	2.4	8	Estimated flow assumed to be higher than DfT ATC 942673 due to station pick up/drop off traffic.
South Road	22,317	6.4	16	DfT ATC 47610 for 2018
Lady Margaret Road	22,317	6.4	16	No data, assumed the same as South Road

Notes:

(a) Traffic speeds based on LAEI (2016). Lower speeds have been assumed on congested or narrow road links.

Table 30: Traffic Data (2025 Do Nothing)

Road Link	AADT	HDV (%)	Speed (kph) (a)	Comments
Botwell Lane	5,438	1.2	32	LAEI 2016 with growth to 2025
Blyth Road (west of Clarendon Road)	2,817	4.2	16	DfT ATC 942673 for 2019 with growth to 2025
Blyth Road (east of Clarendon Road)	5,343	4.2	8	2018 estimated flow with growth to 2025
Uxbridge Road	28,595	4.2	32	DfT ATC 28874 for 2019 with growth to 2025
The Parkway	66,869	4.7	70	DfT ATC 48810 for 2019 with growth to 2025
Bilton Road	6,864	5.9	24	LAEI 2016 with growth to 2025
Pump Lane	10,594	0.83	32	DfT ATC 48810 for 2019 with growth to 2025
Coldharbour Lane	13,294	16.0	16	No data, assumed the same as Station Road
Station Road	13,294	16.0	16	LAEI 2016 with growth to 2025
Clayton Road (east of Clarendon Road)	5,343	4.2	16	No data, assumed the same as Byth Road (east of Clarendon Rd)
Clayton Road (west of Clarendon Road)	2,871	4.2	16	No data, assumed the same as Byth Road (west of Clarendon Rd)
Clarendon Road	5,343	4.2	16	No data, assumed the same as Byth Road (east of Clarendon Rd)

Notes:

(a) Traffic speeds based on LAEI (2016). Lower speeds have been assumed on congested or narrow road links.

APPENDIX C – MODEL VERIFICATION

Verification of the concentrations predicted by the ADMS-Roads model has followed the methodology presented in LAQM.TG16.

Predicted annual mean NO_2 and PM_{10} concentrations have been compared with the 2018 concentrations measured by the following roadside diffusion tube monitoring sites:

- EA13
- HILL18
- HILL27
- HILL28

The 2018 data were used in preference to 2019 because the data capture in 2019 was poor in several locations. The measured concentrations were also higher in 2018, enabling a more robust verification process.

Other monitoring stations were excluded from the verification process due to uncertainties in traffic data, tube location or proximity of the tube to the kerbside.

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

The measured NO_2 concentrations have been converted into an equivalent measured Road-NOx (i.e., the component of total NOx coming from road traffic) concentrations using the Defra NOx from NO_2 calculator (version 8.1). The conversion has used the maximum urban background NO_2 concentration measured in the area of 31 μg/m^3. The measured Road-NOx concentrations are compared with the modelled Road-NOx concentrations in Figure 10.

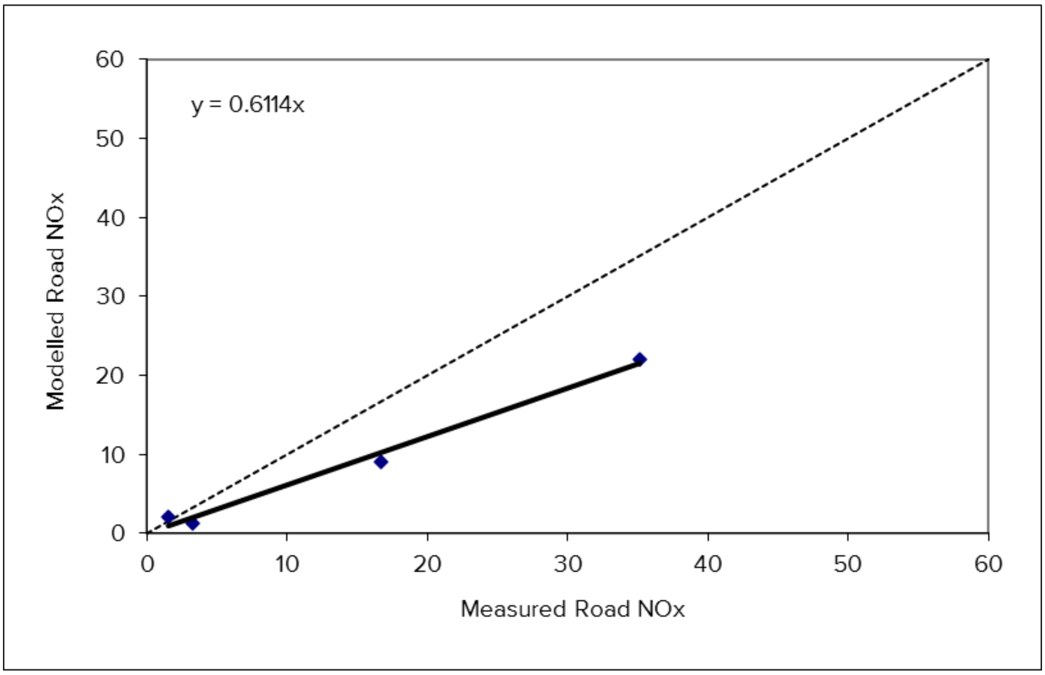

Figure 10: Comparison of Measured Road-NOx Concentrations with Modelled Road-NOx Concentrations

A primary adjustment factor is determined as the ratio between the measured road-NO_x contribution and the modelled Road-NOx contribution, forced through zero (1/0.6114 = 1.636). This factor was then applied to the modelled Road-NOx concentration for each monitoring location to provide an adjusted modelled Road-NOx concentration. The equivalent Road-NO_2 concentration is then determined using the Defra NOx from NO_2 calculator and added to the background NO_2 concentration, for comparison with the measured NO_2 concentration (see Figure 11).

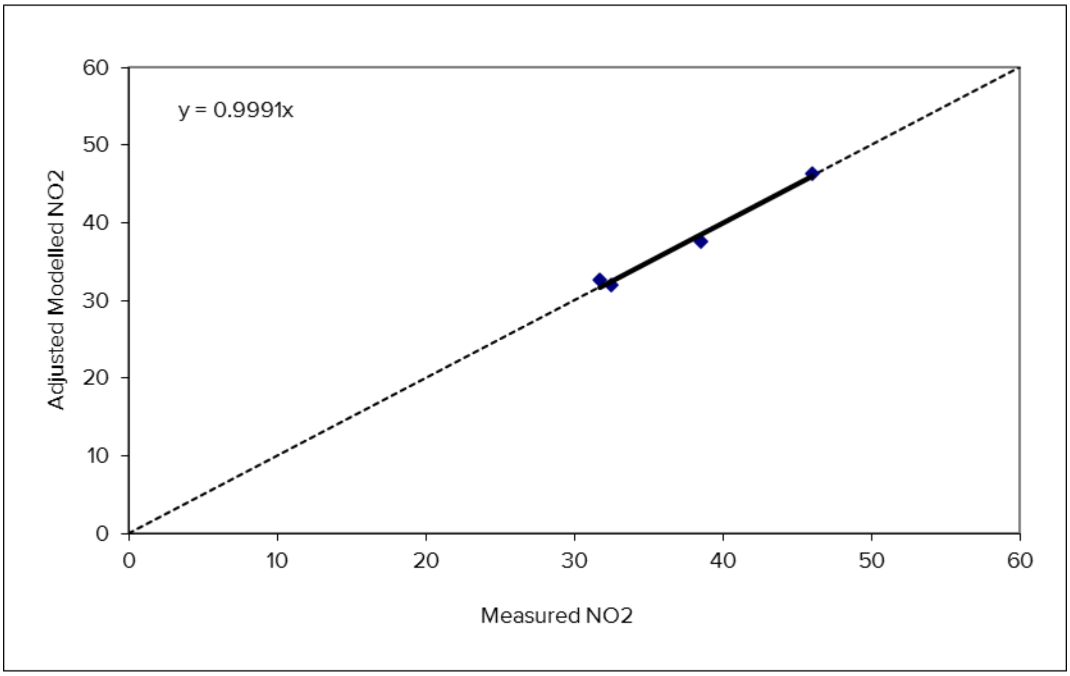

Figure 11: Comparison of Measured NO_2 Concentrations with the Adjusted Modelled NO_2 Concentrations

The average performance of the model can be expressed as the Root Mean Square Error (RMSE), which in accordance with LAQM.TG16 should ideally be less than 10% and not more than 25% of the relevant air quality standard (in this case, the annual mean NO_2 objective of 40 µg/m^3). The RMSE for the comparison of the adjusted modelled and measured NO_2 concentrations is 0.77 µg/m^3, 1.9% of the air quality objective and therefore the modelled concentrations with primary adjustment are considered to provide an acceptable estimate of local air quality.

In the absence of a PM_{10} monitoring site for verification purposes, the derived primary adjustment factor has also been applied to the modelled Road-PM_{10} and Road- $PM_{2.5}$ concentrations, in accordance with LAQM.TG16.

APPENDIX D – GLA CONSTRUCTION DUST MITIGATION MEASURES

Mitigation for all sites: Communications

Mitigation measure	Low Risk	Medium Risk	High Risk
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
2. 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.	H	H	H
3. Display the head or regional office contact information	H	H	H

Mitigation for all sites: Dust Management

Mitigation measure	Low Risk	Medium Risk	High Risk
4. Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.	D	H	H
Site Management			
5. 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.	H	H	H
6. Make the complaints log available to the local authority when asked.	H	H	H
7. 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.	H	H	H
8. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.	N	N	H
Monitoring			
9. 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.	D	D	H
10. 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	H	H	H
11. 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.	H	H	H
12. 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 or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	N	H	H
Preparing and maintaining the site			
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period	D	H	H
16. Avoid site runoff of water or mud.	H	H	H
17. Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H

Mitigation measure	Low Risk	Medium Risk	High Risk
18. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	D	H	H
19. Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
Operating vehicle/machinery and sustainable travel			
20. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable	H	H	H
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
23. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)	D	D	H
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	H	H
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	N	D	H
Operations			
26. 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.	H	H	H
27. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H	H	H
28. Use enclosed chutes and conveyors and covered skips.	H	H	H
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
30. 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.	D	H	H
Waste management			
31. Avoid bonfires and burning of waste materials.	H	H	H

Measures specific to demolition

Mitigation measure	Low Risk	Medium Risk	High Risk
32. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D	D	H
33. 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.	H	H	H
34. Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
35. Bag and remove any biological debris or damp down such material before demolition.	H	H	H

Measures specific to earthworks

Mitigation measure	Low Risk	Medium Risk	High Risk
36. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable..	N	D	H
37. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	N	D	H
38. Only remove the cover in small areas during work and not all at once	N	D	H

Measures specific to construction

Mitigation measure	Low Risk	Medium Risk	High Risk
39. Avoid scabbling (roughening of concrete surfaces) if possible	D	D	H
40. 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.	D	H	H
41. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	N	D	H
42. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	N	D	D

Measures specific to trackout

Mitigation measure	Low Risk	Medium Risk	High Risk
43. 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.	D	H	H
44. Avoid dry sweeping of large areas.	D	H	H
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D	H	H
46. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	N	H	H
47. Record all inspections of haul routes and any subsequent action in a site log book.	D	H	H
48. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	N	H	H
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	D	H	H
50. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	N	H	H
51. Access gates to be located at least 10 m from receptors where possible.	N	H	H

Key to tables:

- H Highly recommended
- D Desirable
- N Not required

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