



Bridge
House,
Oxford
Road,
Uxbridge
UB8 1HS

Air Quality Assessment

June 2018



Ref: 18-4407

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<i>Revision</i>	-
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TABLE OF CONTENTS

1. INTRODUCTION	5
Background.....	5
Site Location and Context	5
2. LEGISLATION AND POLICY	6
European Directives	6
UK Legislation	6
Local Air Quality Management.....	8
Dust....	8
National Planning Policy	8
National Planning Practice Guidance.....	9
Local Planning Policy	9
3. BASELINE	12
Local Air Quality Management.....	12
Air Quality Monitoring	12
Background Pollutant Concentrations	13
4. METHODOLOGY.....	14
Construction Phase Assessment.....	14
Operational Phase Assessment	20
5. ASSESSMENT	26
Construction Phase Assessment.....	26
Operational Phase Assessment	29
Potential Development Impacts.....	31
6. CONCLUSION	33
APPENDIX A	34
Traffic Data	34

1. Introduction

Background

Syntegra Consulting was retained to conduct an air quality assessment for the proposals at Bridge House, Uxbridge UB8 1HS. This report has been prepared to support the planning application for a residential development at the site. The site has previously been approved for a change of use from Class B1 (Office) to Class C3 (Residential).

The proposed development has the potential to expose future users and neighbouring properties to elevated pollution levels during construction and operation phases. As such, this Air Quality Assessment has been prepared to determine baseline conditions at the site and consider its suitability for the proposed use.

Site Location and Context

The site is located at Bridge House, Oxford Road, Uxbridge at approximate National Grid Reference (NGR): 505119E, 184560N. Figure 1 shows the site location and surrounding area. The property is bound by Oxford Road to the north, Grand Union Canal to the east, commercial offices to the south and green space to the west.

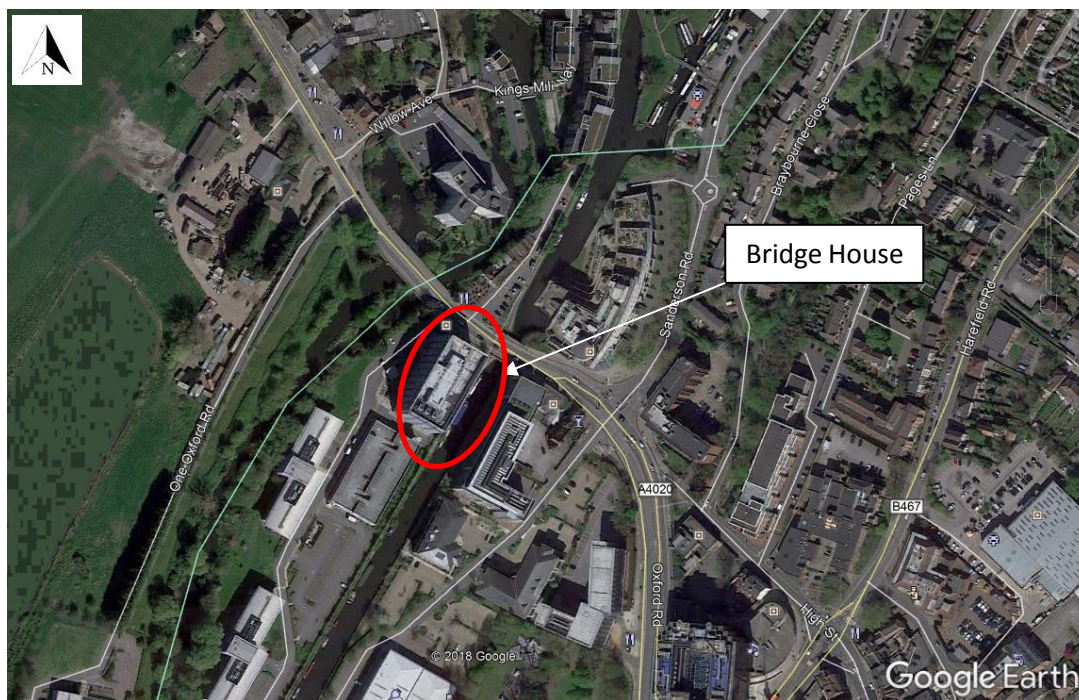


Figure 1: Proposed Site Location (Imagery from Google Earth, 2018)

The proposals comprise the conversion of the existing commercial 6th and 7th floors to contain 25 residential units consisting of 1 to 3-bedroom flats and associated infrastructure.

The London Borough of Hillingdon (LBoH) has declared an Air Quality Management Area (AQMA) throughout the majority of the borough due to exceedances of the annual mean Air Quality Standard (AQS) objective for nitrogen dioxide (NO₂). The development is located within the designated AQMA. There are therefore concerns the proposals will introduce future occupants to exceedances of the relevant AQS objective and operational impacts may influence surrounding sensitive receptors. As

such, concentrations at the site have been assessed in the following report in order to consider location suitability for the proposed use and define any requirement for mitigation. Potential impacts associated with the scheme have also been considered using standard screening methodologies.

2. Legislation and Policy

European Directives

European Union (EU) air quality legislation is provided within Directive 2008/50/EC¹, which came into force on 11th June 2008. This Directive consolidated previous legislation which was designed to deal with specific pollutants in a consistent manner and provided new Air Quality Limit Values (AQLVs) for particulate matter with an aerodynamic diameter of less than 2.5µm. The consolidated Directives include:

- Directive 1999/30/EC - the First Air Quality "Daughter" Directive - sets ambient AQLVs for NO₂, oxides of nitrogen (NO_x), sulphur dioxide, lead and particulate matter with an aerodynamic diameter greater than 10µm (PM₁₀);
- Directive 2000/69/EC - the Second Air Quality "Daughter" Directive - sets ambient AQLVs for benzene and carbon monoxide; and,
- Directive 2002/3/EC - the Third Air Quality "Daughter" Directive - seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

UK Legislation

The Air Quality Standards Regulations (2010) came into force on 11th June 2010 and transposed the EU Directive 2008/50/EC into UK law. AQLVs were published in these regulations for 7 pollutants, as well as Target Values for an additional 5 pollutants.

Part IV of the Environment Act (1995) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives, and measures for improving ambient air quality. The most recent AQS was produced by the Department for Environment, Food and Rural Affairs (Defra) and published July 2007². The AQS sets out AQS objectives that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

Table 1 presents the AQS objectives for pollutants considered within this assessment.

Table 1 - Air Quality Strategy Objectives

Pollutant	Air Quality Strategy Objective	
	Concentration (µg/m ³)	Averaging Period
NO ₂	40	Annual mean

¹ Directive 2008/50/EC on Ambient Air Quality for Cleaner Air for Europe, Council of European Committees, 2008.

² The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

Pollutant	Air Quality Strategy Objective	
	Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum (equivalent to the 99.8 th percentile)
PM ₁₀	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum (equivalent to the 90.4 th percentile)

Table 2 summarises the advice provided in the Greater London Authority (GLA) guidance³ on where the AQS objectives for pollutants considered within this report apply.

Table 2- Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not	Kerbside sites where the public would not be expected to have regular access

³ London Local Air Quality Management (TG16), Technical Guidance 2016 (LLAQM.TG (2016)), GLA, 2016.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
	fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	

Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQS objectives. If it is predicted that levels at locations of relevant exposure, as summarised in *Table 2*, are likely to be exceeded, the LA is required to declare an AQMA. For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQS objectives.

Dust

The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2010), such as construction sites, is provided in Section 79 of Part III of the Environmental Protection Act (1990)⁴. The Act defines nuisance as:

"any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

Enforcement of the Act is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act. Enforcement can insist that there be no dust beyond the boundary of the works. The only defense is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practice measures.

National Planning Policy

The National Planning Policy Framework⁵ (NPPF) was published on 27th March 2012 and sets out the Government's core policies and principles with respect to land use planning, including air quality. The document includes the following considerations which are relevant to the proposed development:

"The planning system should contribute to and enhance the natural and local environment by: [...]"

⁴ Environmental Protection Act, 1990. (<http://www.legislation.gov.uk/ukpga/1990/43/contents>)

⁵ NPPF, Department for Communities and Local Government, 2012.

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"

"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 implications of the NPPF have been considered throughout this assessment.

National Planning Practice Guidance

The National Planning Practice Guidance⁶ (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. Why should planning be concerned about air quality?
2. What is the role of Local Plans with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality be relevant to a planning decision?
6. Where to start if bringing forward a proposal where air quality could be a concern?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?
9. How do considerations about air quality fit into the development management process?

These were reviewed, and the relevant guidance considered as necessary throughout the undertaking of this assessment.

Local Planning Policy

The London Plan

Until the new London Plan is finalised, the current London Plan March 2016⁷ which was published by the GLA and along with the adopted alterations, sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 2031. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor.

The London Plan policies relating to air quality are outlined below:

"Policy 5.3 - Sustainable design and construction

Strategic

⁶ <http://planningguidance.planningportal.gov.uk>.

⁷ The London Plan March 2016, GLA, 2016.

- A. *The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments and to adapt to the effects of climate change over their lifetime.*

Planning decisions

- B. *Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.*
- C. *Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:*

[...]

d) minimising pollution (including noise, air and urban run-off)

[...]"

"Policy 7.14 - Improving air quality

Strategic

- A. *The Mayor recognises the importance of tackling air pollution and improving air quality to London's development and the health and well-being of its people. He will work with strategic partners to ensure that the spatial, climate change, transport and design policies of this plan support implementation of his Air Quality and Transport strategies to achieve reductions in pollutant emissions and minimise public exposure to pollution.*

Planning decisions

- B. *Development proposals should:*

a) minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3)

b) promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' 'The control of dust and emissions from construction and demolition'

c) be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as AQMAs).

d) ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that

on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches

e) where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified [...]"

Local Development Framework

LBoH's Local Plan⁸ comprises a spatial vision, strategic objectives, a spatial strategy, core policies and a monitoring and implementations framework with clear objectives for achieving delivery. It was adopted in November 2012 and sets out the overall level and broad locations of growth up to 2026.

A review of the LBoH Local Plan indicated the following policies in relation to air quality that are relevant to this assessment:

"BE1 - Built Environment

All new developments should:

[...]

10. Maximise the opportunities for all new homes to contribute to tackling and adapting to climate change and reducing emissions of local air quality pollutants."

"EM8: Land, Water, Air and Noise

[...]

All developments should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.

All major development within the AQMA should demonstrate air quality neutrality (no worsening impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increased provision for vehicles with cleaner transport fuels; deliver increased planting through soft landscaping and living walls and roofs; and provide a management plan for ensuring air quality impacts can be kept to a minimum.

The council seeks to reduce the levels of pollutants referred to in the Government's National Air Quality Strategy and will have regard to the Mayor's Air Quality Strategy.

London Boroughs should also take account of the findings of the Air Quality Review and Assessments and Actions plans, in particular where AQMAs have been designated.

The Council has a network of Air Quality Monitoring stations but recognises that this can be widened to improve understanding of air quality impacts. The Council

⁸ LBoH Local Plan: Part 1 Strategic Policies, LBoH, 2012.

may therefore require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements."

The implications of these policies were taken into consideration throughout the undertaking of the assessment.

3. Baseline

Existing air quality conditions in the vicinity of the proposed development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

Local Air Quality Management

Annual mean concentrations of NO₂ are above the relevant AQS objective within the borough. As such, an AQMA covering most of the borough has been declared. A description of the AQMA is described as:

"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 the Yeading Brook north until its intersection with the Chiltern-Marylebone railway line."

The proposed development is located within the AQMA; therefore, there is the potential for the site to be affected by elevated pollutant concentrations and any emissions from the proposals to impact on this sensitive area. These issues have been considered throughout the assessment.

Air Quality Monitoring

Monitoring of pollutant concentrations is undertaken by LBoH throughout the borough. Recent NO₂ results recorded at the closest monitoring sites to the development are shown in *Table 3*. The closest monitoring site (HD43) is located roadside at approximately 1km to the south east of the proposed development site along Park Road (B483). HD212 is the second closest monitoring location and is located approximately 1.3km south east from the site along the A4020.

Table 3 – Measured Annual Mean NO₂ Concentrations at Local Authority Monitoring Sites Located in Closest Proximity to Proposed Development Site

Monitoring Site		Classification	Distance from Proposed Development Site (m)	Monitored NO ₂ Concentration (µg/m ³)		
				2014	2015	2016
HD43	Uxbridge Day Nursery Park Road Uxbridge (on wire Fence)	Roadside	1020	42.8	42.8	39.9
HD212	59 Hillingdon Road, Uxbridge Lamp Post (56)	Roadside	1300	38.5	35.5	32.6

[1] Bold indicates exceedance of the AQS objective for Annual Mean NO₂

Reference should be made to Figure 2 for a map of the monitoring locations. Both locations are likely not representative of concentrations at the site due to their distance from the development site.

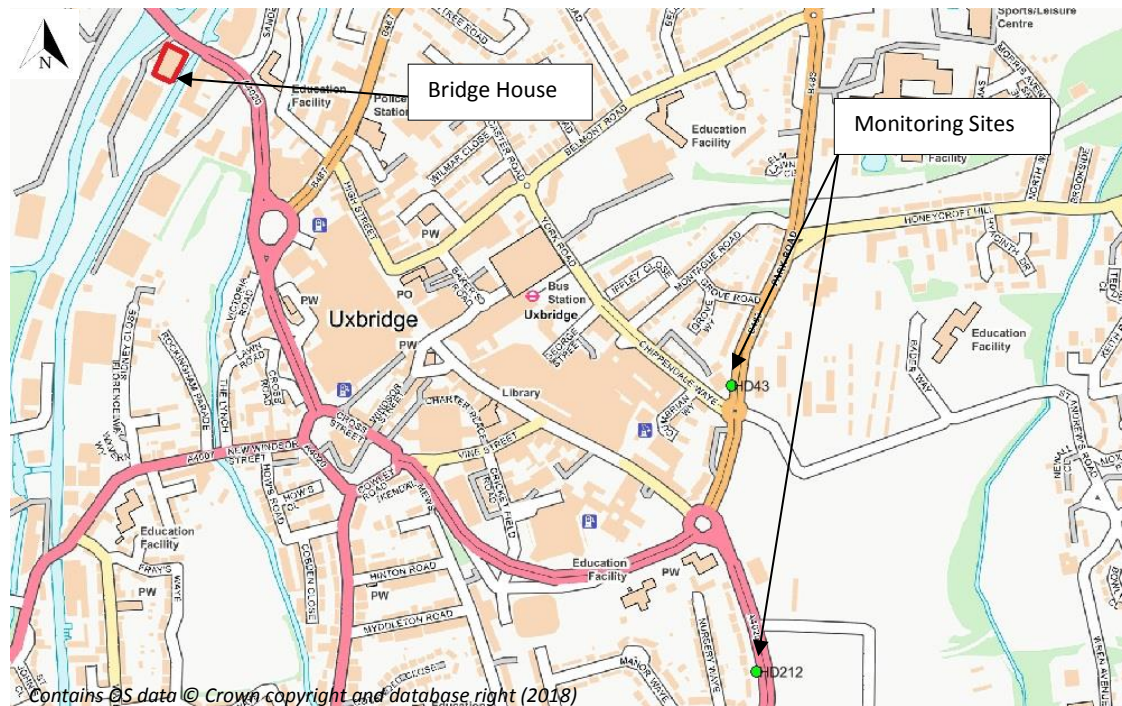


Figure 2 – Local Authority Monitoring Site Locations in Closest Proximity to Development Site

Measured historical concentrations from the closest automatic monitor to the development site is shown in Table 4. The PM₁₀ AQS objectives have not been exceeded in the recent years in this location, however the monitoring site is located approximately 5.7km from the proposals and concentrations are likely not reflective of those at the site.

Table 4 –Local Authority Monitoring Results –Annual mean PM₁₀

Monitoring Site		Monitored PM ₁₀ Concentration (µg/m³) ^[1]		
		2014	2015	2016
HI1	Hillingdon 1 - South Ruislip (Roadside)	23.2 (18)	24 (3)	22 (9)

[1] Brackets indicate the number of times the 24hr limit was exceeded. Bold indicates exceedance of the AQS objectives.

Background Pollutant Concentrations

Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by Defra for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 505500, 184500. Data for this location was downloaded from the Defra website for the purpose of this assessment and is summarised in Table 5.

Table 5 - Background Pollutant Concentrations

Pollutant	Defra Predicted Background Concentration ($\mu\text{g}/\text{m}^3$)		
	2016 (base year)	2018 (earliest construction year)	2020 (earliest development operating year)
NO ₂	25.2	23.4	21.4
PM ₁₀	15.5	15.1	14.7

As shown in Table 5, the Defra predicted background concentrations are below the relevant AQS objectives at the development site.

4. Methodology

Construction Phase Assessment

The proposed development has the potential to expose existing residents to poor air quality during construction phases of the works. To determine appropriate mitigation measures a dust risk assessment was undertaken in accordance with the methodology outlined within the Mayor of London's document 'The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance'⁹, which is based on the Institute of Air Quality Management's (IAQM) 'Guidance on the Assessment of Dust from Demolition and Construction'¹⁰.

Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM₁₀.

The assessment steps are detailed below.

Step 1

Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m of the boundary or 50m from the construction vehicle route (up to 500m from the site entrance for large sites, 200m from medium sites and 50m from small sites), then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or

⁹ The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance, The Mayor of London, 2014.

¹⁰ Guidance on the Assessment of Dust from Demolition and Construction version 1.1, IAQM, 2014.

50m from the construction vehicle route (up to 500m from the site entrance for large sites, 200m from medium sites and 50m from small sites), then the assessment also proceeds to Step 2.

Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 6.

Table 6 – Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	Total building volume greater than 50,000m ³ Potentially dusty construction material (e.g. concrete) On-site crushing and screening Demolition activities greater than 20m above ground level
	Earthworks	Total site area greater than 10,000m ² Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) More than 10 heavy earth moving vehicles active at any one time Formation of bunds greater than 8m in height More than 100,000 tonnes of material moved
	Construction	Total building volume greater than 100,000m ³ On site concrete batching Sandblasting
	Trackout	More than 50 Heavy Duty Vehicle (HDV) trips per day Potentially dusty surface material (e.g. high clay content) Unpaved road length greater than 100m
Medium	Demolition	Total building volume 20,000m ³ to 50,000m ³ Potentially dusty construction material Demolition activities 10m to 20m above ground level

Magnitude	Activity	Criteria
	Earthworks	Total site area 2,500m ² to 10,000m ² Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time Formation of bunds 4m to 8m in height Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	Total building volume 25,000m ³ to 100,000m ³ Potentially dusty construction material (e.g. concrete) On site concrete batching
	Trackout	10 to 50 HDV trips per day Moderately dusty surface material (e.g. high clay content) Unpaved road length 50m to 100m
Small	Demolition	Total building volume under 20,000m ³ Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities less than 10m above ground level. Demolition activities during wetter months
	Earthworks	Total site area less than 2,500m ² Soil type with large grain size (e.g. sand) Less than 5 heavy earth moving vehicles active at any one time Formation of bunds less than 4m in height Total material moved less than 20,000 tonnes Earthworks during wetter months
	Construction	Total building volume less than 25,000m ³ Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 10 HDV trips per day Surface material with low potential for dust release Unpaved road length less than 50m

Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors are shown in Table 7.

Table 7– Construction Dust - Examples of Factors Defining Sensitivity of an Area for Human Receptors

Receptor Sensitivity	Examples
	Human Receptors
High	Users expect of high levels of amenity High aesthetic or value property People expected to be present continuously for extended periods of time Locations where members of the public are exposed over a time period relevant to the objective for PM₁₀. e.g. residential properties, hospitals, schools and residential care homes
Medium	Users would expect to enjoy a reasonable level of amenity Aesthetics or value of their property could be diminished by soiling People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work
Low	Enjoyment of amenity would not reasonably be expected Property would not be expected to be diminished in appearance Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads

The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

These factors were considered during the undertaking of the assessment.

The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 8. Only the highest level of sensitivity needs to be considered.

Table 8 – Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

Table 9 outlines the criteria for determining the sensitivity of the area to human health impacts. Only the highest level of sensitivity needs to be considered.

Table 9 – Construction Dust - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Conc.	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
High	Greater than 32µg/m ³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium		More than 10	High	Medium	Low	Low	Low

Receptor Sensitivity	Annual Mean PM ₁₀ Conc.	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
	Greater than 32µg/m ³	1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m ³	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low	Low

Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts. Table 10 outlines the risk category from demolition activities.

Table 10 – Construction Dust - Dust Risk Category from Demolition Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Medium	Low	Negligible

Table 4 outlines the risk category from earthworks and construction activities.

Table 41 – Construction Dust - Dust Risk Category from Earthworks and Construction Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Table 52 outlines the risk category from trackout activities.

Table 5 – Construction Dust - Dust Risk Category from Trackout Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

Step 3

Step 3 requires the identification of site specific mitigation measures within the guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with negligible risk, mitigation measures beyond those required by legislation are not required. Additional controls may be applied as part of good practice.

Step 4

Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows this is normally possible and the residual effect will normally be '**not significant**'.

Operational Phase Assessment

NO₂ and PM₁₀ concentrations were assessed across the site using detailed dispersion modelling. The assessment was undertaken in accordance with the following methodology.

Modelling was undertaken for 2016 for verification purposes and 2020 to represent the earliest development opening year.

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 4.1.1.0). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and Defra.

The model requires input data that details the following parameters:

- Assessment area;
- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

These are detailed in the following Sections.

Assessment Area

Ambient concentrations were predicted over the area NGR: 505019 184660 to 505219, 184460. One Cartesian grid was used within the model to produce data suitable for contour plotting using the Surfer software package.

All roads within the LAEI model located up to 250m from the site were included in the dispersion model in order to ensure the impact of all relevant vehicle emissions in the vicinity of the development were considered.

Traffic Flow Data

Traffic data for use in the assessment, including 24-hour Annual Average Daily Traffic (AADT) flows and fleet composition, was obtained from the London Atmospheric Emissions Inventory (LAEI). The LAEI was produced by the GLA and provides traffic flows throughout London for a number of scenarios. The LAEI is referenced in the GLA guidance as being a suitable source of data for air quality assessments and is therefore considered to provide a reasonable estimate of traffic flow in the vicinity of the site.

The baseline traffic data was converted to the appropriate assessment years utilising factors obtained from TEMPro (version 7.2). This software package has been developed by the Department for Transport (DfT) to calculate future traffic growth within the UK.

Road widths were estimated from aerial photography. A summary of the traffic data used in the assessment is provided in Appendix A.

Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 8.0.1). This has been produced by Defra and incorporates updated COPERT 5 vehicle emission factors and fleet information. As a conservative estimate emission factors for 2016 were used for the assessment year (2020).

Meteorological Data

Meteorological data used in the assessment was taken from RAF Northolt meteorological station over the period 1st January 2016 to 31st December 2016 (inclusive). RAF Northolt is located approximately 4.7km west of the proposed development. LAQM TG(16)¹¹ recommends using data from meteorological stations within 30km of the assessment area for use in the dispersion modelling assessment. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for use in the dispersion model. Figure 3 shows the wind rose of the meteorological data used in the assessment.

¹¹ Local Air Quality Management Technical Guidance (TG16), Defra, 2018.

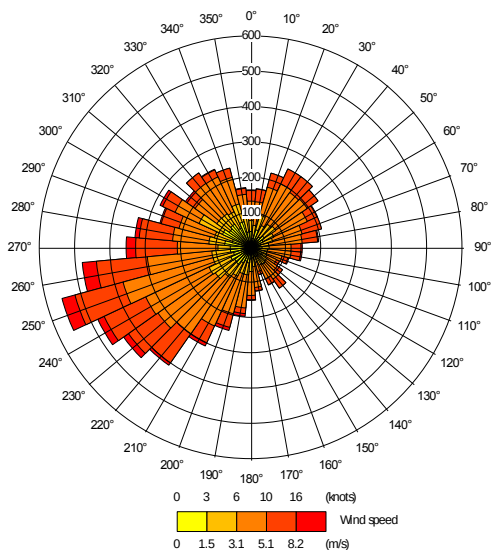


Figure 3: Wind Rose from RAF Northolt Meteorological Station for 2016

Roughness Length

A z_0 of 0.5m was used to describe the modelling extents. This value of z_0 is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'Parkland and Open Suburbia'.

A z_0 of 0.3m was used to describe the meteorological site. This value of z_0 is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'agricultural areas (max)'.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 100m was used to describe the modelling extents and meteorological site. This value is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'large conurbations > 1 million'.

Background Concentrations

Background concentrations obtained from Defra for the grid square containing the site (505500, 184500) were used in the assessment to represent pollutant levels across the modelling extents.

In order to avoid 'double-counting' of road vehicle exhaust emissions, the proportion of the relevant background concentrations from Primary A-roads and Minor roads within the grid square were removed in accordance with the methodology outlined in GLA guidance¹². These sectors were considered to be most representative of those being modelled. Background concentrations before and after adjustment are shown in *Table 13*.

¹² London Local Air Quality Management (TG16), Technical Guidance 2016 (LLAQM.TG (2016)), GLA, 2016.

Table 13 - Background Pollutant Concentrations - Sector Removal

Pollutant	Predicted Background Concentration ($\mu\text{g}/\text{m}^3$)			
	Total Predicted 2016 Background	Predicted Background with Sectors Removed 2016	Total Predicted 2020 Background	Predicted Background with Sectors Removed 2020
NO ₂	25.2	22.1	21.4	18.6
PM ₁₀	15.5	15.3	14.7	14.6

NO_x to NO₂ Conversion

Predicted annual mean NO_x concentrations were converted to NO₂ concentrations using the spreadsheet (version 6.1) provided by Defra, which is the method detailed within the GLA guidance¹³.

Verification

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and,
- Uncertainties associated with monitoring data, including locations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects. For the purpose of this assessment model verification was undertaken for 2016 using traffic data, meteorological data and monitoring results from this year.

Nitrogen Dioxide

Diffusion tube monitoring of NO₂ concentrations was undertaken at one appropriate location (i.e. sufficient data collection, site type etc.) for verification purposes in closest proximity to the modelling extents during 2016 (Site HD212). The result was obtained and the road contribution to total NO_x concentration calculated following the methodology contained within GLA guidance. The monitored annual mean NO₂ concentration and calculated road NO_x concentration is summarised in Table 14.

¹³ London Local Air Quality Management (TG16), Technical Guidance 2016 (LLAQM.TG (2016)), GLA, 2016.

Table 14 - NO_x Verification Monitoring Concentrations

Monitoring Location		Monitored NO ₂ Concentration (µg/m ³)	Calculated Road NO _x Concentration (µg/m ³)
HD212	59 Hillingdon Road, Uxbridge Lamp Post (56)	32.6	28.75

The annual mean road NO_x concentration predicted from the dispersion model and the road NO_x concentration calculated from the monitoring result is summarised in Table 15.

Table 15 - NO_x Verification Predicted Modelling Concentrations

Monitoring Location		Calculated Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)
HD212	59 Hillingdon Road, Uxbridge Lamp Post (56)	28.75	21.36

The monitored and modelled road NO_x concentrations were compared to give a verification factor of 1.346. This factor was applied to the dispersion modelling results. The discrepancy between the modelled and measured values at the monitoring location may be due to various other source conditions at the site which are not taken into account in the model.

Particulate Matter

Monitoring of PM₁₀ concentrations is not undertaken within the assessment extents. The verification adjustment factor was applied to the modelled results as it is accepted in these circumstances the NO_x verification factor can be used to adjust PM₁₀ model predictions in accordance with the methodology provided within the GLA guidance¹⁴.

Determination of Impacts

Exposure of Future Residents

The proposed development includes residential units and as such has the potential to introduce new receptors into an area of existing poor quality. The results of the dispersion modelling assessment were therefore compared against the Air Pollution Exposure Criteria (APEC) contained within the London Councils Air Quality and Planning Guidance¹⁵. These are outlined in Table 6 and allow determination of the significance of predicted pollution levels and associated exposure.

¹⁴ London Local Air Quality Management (TG16), Technical Guidance 2016 (LLAQM.TG (2016)), GLA, 2016.

¹⁵ London Councils Air Quality and Planning Guidance, London Councils, 2007.

Table 6-Air Pollution Exposure Criteria

Category	Applicable Range		Recommendation
	Annual Mean NO ₂ or PM ₁₀	24-hour PM ₁₀	
APEC-A	Below 5% of the annual mean AQS Objective	> 1-day less than AQS Objective	No air quality grounds for refusal; however, mitigation of any emissions should be considered
APEC-B	Between 5% below or above the annual mean AQS Objective	Between 1-day above or below AQS 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	Above 5% of the annual mean AQS Objective	> 1-day more than AQS Objective	Refusal on air quality grounds should be anticipated, unless the LA 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

A significant area of London would fall under APEC-C due to high NO₂ concentrations throughout the city. The inclusion of suitable mitigation measures to protect future residents is therefore considered a suitable way to progress sustainable schemes in these locations and has been considered within this assessment.

Operational Phase Road Traffic Assessment (Exposure of Existing Receptors)

The development has the potential to impact on existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site. A screening assessment was therefore undertaken using the criteria contained within the Highways Agency 'Design Manual for Roads and Bridges'¹⁶ and Institute of Air Quality Management (IAQM) 'Land-Use Planning & Development Control: Planning for Air Quality'¹⁷ guidance documents to determine the potential for trips generated by the development to affect local air quality.

The DMRB provides the following criteria for determination of road links potentially affected by changes in traffic flow:

- Daily AADT flows change by 1,000 or more;
- Daily Heavy-Duty Vehicle (HDV) AADT flows change by 200 or more;

¹⁶ DMRB Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.

¹⁷ Land-Use planning & Development Control: Planning for Air Quality, IAQM, 2017.

- Daily average speed changes by 10km/hr or more; or,
- Peak hour speed changes by 20km/hr or more.

The IAQM 'Land-Use Planning & Development Control: Planning for Air Quality' guidance¹⁸ document provides the following criteria to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:

- A change of Light Duty Vehicle (LDV) flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- A change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of roads where the change is 5m or more and the road is within an AQMA; or,
- Introduction of a new junction or removal of an existing junction near to relevant receptors.

Should these criteria not be met, then the DMRB and IAQM guidance documents consider air quality impacts associated with a scheme to be **negligible** and no further assessment is required.

Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance.

5. Assessment

Construction Phase Assessment

The proposed construction has the ability to impact an area with existing poor air quality. The construction assessment is detailed below.

Step 1

The undertaking demolition, excavation, ground works, cutting, construction and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from highway surfaces. The potential for impacts at sensitive locations depends on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

As there are a number of sensitive receptors located within 350m of the proposed site, a detailed assessment of potential dust impacts was required. There are no ecological receptors sensitive to dust within 50m of the site or trackout boundary. As such, ecological impacts have not been assessed further.

Step 2A

Demolition

There no demolition activities planned for the works. In accordance with the criteria outlined in the Mayor of London's guidance document, the magnitude of potential dust emissions from demolition is classified as **negligible**.

¹⁸ Land-Use planning & Development Control: Planning for Air Quality, IAQM, 2017.

Earthworks

There are no earthworks activities planned for the works. In accordance with the criteria outlined in the guidance document, the magnitude of potential dust emissions from earthworks is classified as **negligible**.

Construction

The total building volume is predicted to be less than 25,000m³. Construction materials would most likely be comprised of low potential for dust release. In accordance with the criteria outlined in the guidance document, the magnitude of potential dust emissions from construction is classified as **small**.

Trackout

The proposed site would most likely be accessed from Oxford Road. From the information presently available, it is considered that there would not be more than 10 HDV movements per day and unpaved haul road lengths are unlikely to be greater than 50m. As such, in accordance with the guidance criteria, the magnitude of potential dust emissions from trackout is classified as **small**. The dust emission magnitude for the project is summarised in Table 7.

Table 7 – Dust Emission Magnitude Summary

Activity	Dust emission magnitude
Demolition	Negligible
Earthworks	Negligible
Construction	Small
Trackout	Small

Step 2B

Receptors sensitive to potential dust impacts during demolition, earthworks and construction were approximated and are summarised in Table 18.

Table 8 – Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from Site (m)	Approximate Number of Human Receptors*
Less than 20	>100 (Receptor Sensitivity=medium)
20 – 50	>100 (Receptor Sensitivity=medium)
50 - 100	>100 (Receptor Sensitivity=high)
100 – 200	>100 (Receptor Sensitivity=high)
200 - 350	>100 (Receptor Sensitivity=high)

*Number of residential and commercial properties approximated using professional judgement

Receptors sensitive to potential dust impacts during trackout were approximated from a desktop study of the area up to 50m from the road network within 50m of the Site access based on the magnitude of potential dust release. These are summarised in Table .

Table 19 – Trackout Dust Sensitive Receptors

Distance from Trackout Study Area (m)	Approximate Number of Human Receptors*
Less than 20	10-100 (Receptor Sensitivity=medium)
20 – 50	>100 (Receptor Sensitivity=high)

*Number of residential properties approximated using professional judgement

In order to determine the sensitivity of the receiving environment, the background concentration for PM₁₀ was obtained from the Defra website^{Error! Bookmark not defined.} and identified as being 15.5µg/m³ for 2016, at the closest monitoring site the concentration was measured as 23µg/m³ in 2016. Therefore, health impacts were determined based on the criteria within the less than 24µg/m³ category.

The sensitivity of the receiving environment to potential dust impacts is considered to be high in terms of human receptors as users would expect to enjoy a reasonable level of amenity, aesthetics or value or their property could be diminished by soiling and people would be expected to be present for extended periods of time e.g. residential properties. It should be noted that in accordance with the IAQM guidance¹⁰, the highest level of sensitivity should be recorded. The sensitivity of the receiving environment to specific dust impacts is summarised in Table 20.

Table 20 – Summary of the Sensitivity of the Area

Potential effect	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Negligible	Negligible	Medium	Medium
Human health	Negligible	Negligible	Low	Low

Step 2C

The risk of effects in the absence of environmental measures was then defined based on the interaction between the magnitude of emission and the highest level of area sensitivity (as determined in Steps 2A and 2B) for each construction activity. The risk of dust effects is shown below in Table 21.

Table 21 – Summary of the Risk of Dust Effects

Potential Effect	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Negligible	Negligible	Low	Negligible
Human health	Negligible	Negligible	Negligible	Negligible

The maximum risk of dust effects was determined to be **Low**. It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Mitigation recommended to minimise sensitive receptor exposure to construction dust is included in the Mayor of London's Guidance document. Should the appropriate mitigation suggested in this document be adhered too, the construction dust impacts on surrounding sensitive receptors are likely to be negligible.

Operational Phase Assessment

Impacts on Existing Receptors

Dispersion modelling was undertaken with the inputs described in Section 4 to quantify concentrations at the site. As there is not anticipated to be any additional road traffic generation from the proposals the impacts on air quality from increased road traffic sources associated with the proposals were deemed to be negligible as per the IAQM guidance¹⁹.

Impacts on Future Receptors

Nitrogen Dioxide

Predicted annual mean NO₂ concentrations across the proposed development site are shown in Figure 5. The annual mean NO₂ concentrations were predicted to be below the relevant AQS objective of 40µg/m³ at all locations across the development. The maximum concentration predicted at the site boundary was 18.9µg/m³, which is classified as APEC-A in accordance with the London Council Air Quality and Planning Guidance²⁰.

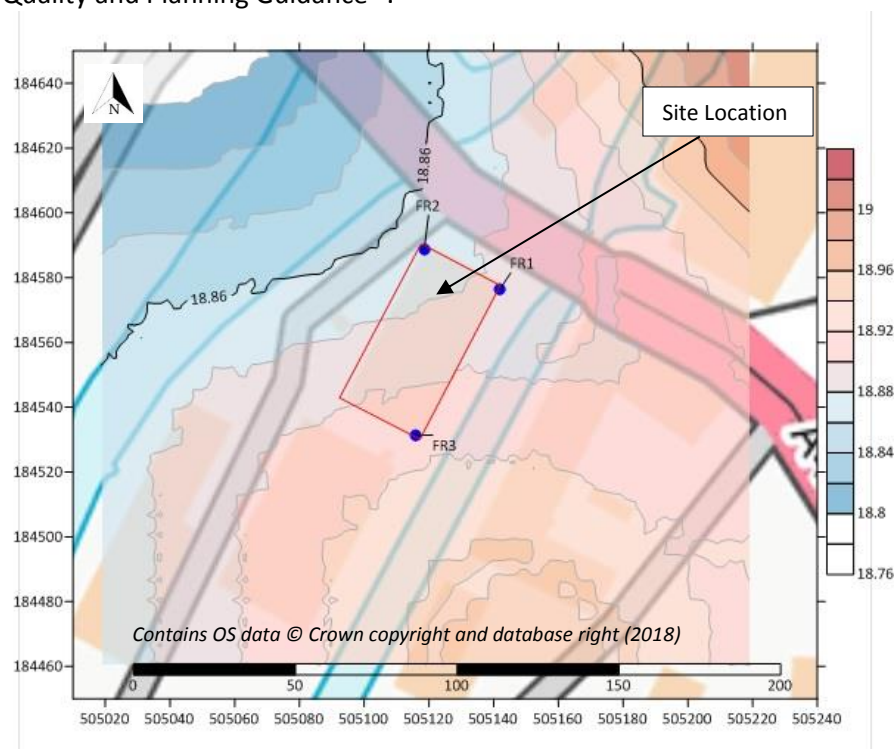


Figure 5 – Contour Plot of Predicted Annual Mean NO₂ Concentrations (µg/m³) at Future Receptors

¹⁹ Land-Use planning & Development Control: Planning for Air Quality, IAQM, 2017.

²⁰ London Councils Air Quality and Planning Guidance, London Councils, 2007.

Discrete receptor locations were modelled at the worst-case facades of the proposals. Results can be seen Table 22. All of the worst-case receptors were predicted to experience concentrations less than the AQS objective for annual mean NO₂. Predicted concentrations are likely overly conservative as it is anticipated concentrations at the height of the proposals (22m) would be at background levels.

Table 22 – Annual Mean NO₂ concentrations Predicted at Worst-Case Discrete Receptor Locations

Receptor ID	X,Y (BNG)		Predicted Annual Mean NO ₂ Concentrations (µg/m ³)	% of Standard	APEC Classification	Receptor Location
R1	505142	184576	18.89	47%	APEC A	Future 6 th floor
R2	505119	184589	18.87	47%	APEC A	Future 6 th floor
R3	505116	184531	18.91	47%	APEC A	Future 6 th floor
R1	505142	184576	18.79	47%	APEC A	Future 7 th Floor
R2	505119	184589	18.78	47%	APEC A	Future 7 th Floor
R3	505116	184531	18.81	47%	APEC A	Future 7 th Floor

As per the Defra's guidance (TG16)²¹, concentrations above 60µg/m³ indicate the potential for the exceedance of the short term hourly NO₂ AQS objective to be exceeded. It is not likely the short-term objective would be exceeded as the maximum concentrations predicted at the site are at background levels.

Particulate Matter

As shown in Figure 6, annual mean PM₁₀ concentrations were predicted to be well below the AQS objective of 40µg/m³ across the development site. Predicted concentrations across the site were classified as APEC-A in accordance with the London Councils Air Quality and Planning Guidance²². Short term impacts were assessed by determining the mean 24-hour concentrations of PM₁₀. The AQS objective allows for the short-term objective of 50 µg/m³ to be exceeded up to 35 times per year (equivalent to the 90.4th percentile). The results of the dispersion modelling assessment indicated the AQS objective short-term objective for PM₁₀ was not exceeded at the proposed development site.

²¹ Local Air Quality Management Technical Guidance (TG16), Defra, 2018.

²² London Councils Air Quality and Planning Guidance, London Councils, 2007.

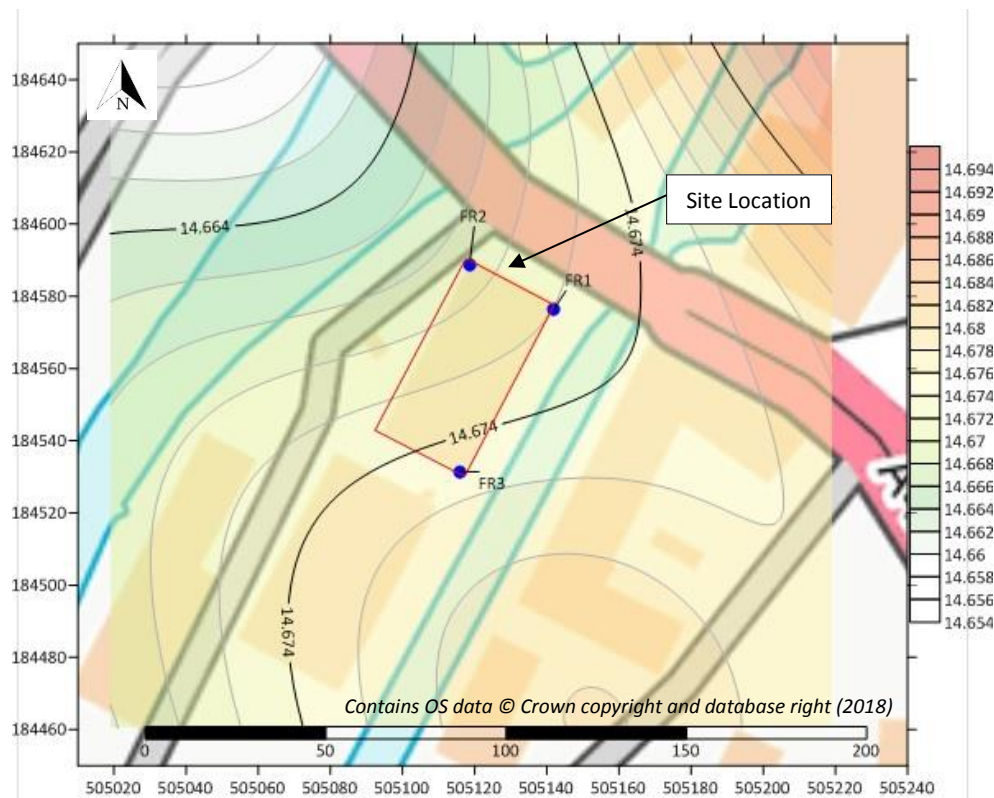


Figure 6 - Contour Plot of Predicted Annual Mean PM₁₀ Concentration (µg/m³)

Based on the assessment results, exposure of future site users to exceedances of the relevant AQS objectives for PM₁₀ is considered unlikely as a result of the proposed development.

Potential Development Impacts

Air Quality Neutral

The London Plan²³ requires that all developments are 'air quality neutral' to ensure proposals do not lead to further deterioration of existing poor air quality. In order to support this policy, guidance²⁴ has been produced on behalf of the GLA. The document provides a methodology for determining potential emissions from a development and benchmark values for comparison purposes. Where the benchmark is exceeded then action is required, either locally or by way of off-setting.

Review of the Air Quality Neutral guidance document revealed an assessment is only required in the following circumstances:

For 10 or more residential dwellings (or where the number is not given, an area of more than 0.5 ha);
or,
For all other uses, where the floor space is 1,000m² or more (or the site area is 1ha or more).

As the proposals are for 25 residential units, the air quality neutral assessment was undertaken as described below.

²³ The London Plan, Greater London Authority, 2011.

²⁴ Air Quality Neutral Planning Support Update: GLA 80371, Air Quality Consultants and Environ, 2014.

Building Emissions

The Building Emission Benchmark (BEB) has been calculated using the GLA Air Quality Neutral Planning Support guidance document²⁵ based on the land-use class of the proposed development. This is provided in Table 23.

The floorspace schedule was provided by the architects for the project. It should be noted at this stage Combined Heat and Power (CHP) units are not proposed for the development. As such, a BEB for PM₁₀ has not been calculated. The BEB for the proposed site is calculated to be 47.1 kg NOx/year.

Table 23 – Building Emission Benchmark

Land Use	Area (m ²)	Emission Benchmark (gNOx/m ² /annum)	Annual Emission (kgNOx/yr)
Residential (Class C3)	1769	26.2	47.1

Building emissions were calculated using the proposed emission use of the development (152,055 kWh/yr), which was provided by the engineers for the project, and the proposed floor area. The emission factor was provided in the GLA guidance document. Table 24 shows the NOx building emissions calculated for the proposed development site which is anticipated to be 11.9 kg/yr.

Table 24 – NOx Building Emissions for Proposed Development Site

Land Use	Area (m ²)	Anticipated Energy Use (kWh/yr)	Emission Rate (kg/kWh)	Annual Emission (kg/yr)
Residential (Class C3)	1769	152055	0.0000785	11.9

As seen in Table 25, the annual NOx energy emissions are calculated to be below the applicable building emission benchmark; therefore, the proposed development is classified as air quality neutral with respect to building emissions. No further reduction measures or off-setting is required.

Table 25 – Energy Emissions

Scenario	NOx Emissions (kg/yr.)
Development Emissions	11.9
BEB	47.1
Difference	-35.2

Transport Emissions

²⁵ Air Quality Neutral Planning Support Update: GLA 80371, Air Quality Consultants Ltd., 2014.

Any additional vehicle movements associated with the development will generate exhaust emissions on the local and regional road networks. Anticipated trip generation from the scheme was assumed to be negligible as it is unlikely that the development will result in significant traffic generation on the local road network. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be negligible.

6. Conclusion

This report has been prepared to support the planning application for a residential development on the 6th and 7th floors of Bridge House, Oxford Road, Uxbridge.

The proposed development has the potential to expose future users to elevated pollution levels and cause adverse air quality impacts in the area during operation and construction phases. As such, an Air Quality Assessment was required in order to determine baseline conditions at the site, consider its suitability for the proposed end-use, and assess potential effects associated with the scheme.

Construction phase impacts were deemed to be negligible as per the guidance in the Mayor of London's supplementary guidance on the control of construction dust emissions, providing the mitigation measures suggested in the guidance is adhered to.

Dispersion modelling was undertaken using ADMS-Roads version 4.1.1.0 in order to predict pollutant concentrations at the development location associated with emissions from the local highway network. Results were subsequently verified using monitoring data obtained from LBoH.

The results of the dispersion modelling assessment indicated that predicted concentrations of NO₂ and PM₁₀ were not above the relevant long and short term AQS objectives at the site location. Levels were categorised as APEC-A in accordance with the London Councils Air Quality and Planning Guidance. As no additional traffic generation is anticipated from the proposals, the impacts of the future use on air quality due to traffic exhaust emissions were deemed to be negligible. As such, the site is considered suitable for the proposed use from an air quality perspective.

Based on the assessment results, air quality issues should not be considered a constraint to planning consent for the development.

Appendix A

Traffic Data

Table A1 – AADT, Speed, Road Width Data

Link	Description	24-hour AADT Flow		Mean Vehicle Speed (km/h)	Road Width (m)
		2016	2020		
Link 1	OXFORD ROAD	11589	12084	22	7.6
Link 2	OXFORD ROAD	11589	12084	11	6.5
Link 3	OXFORD ROAD	23178	24169	39	6.5
Link 4	OXFORD ROAD	13627	14209	25	5.5
Link 5	OXFORD ROAD	13627	14209	27	6.7
Link 6	OXFORD ROAD	11589	12084	34	3.7
Link 7	OXFORD ROAD	13627	14210	30	5.6
Link 8	SANDERSON ROAD	27206	28369	40	3.0
Link 9	SANDERSON ROAD	27158	28319	40	6.0
Link 10	OXFORD ROAD	23178	24169	41	7.5
Link 11	OXFORD ROAD	23178	24169	36	8.5
Link 12	OXFORD ROAD	23178	24169	42	5.6
Links for Verification					
Link V1	HILLINGDON ROAD	22064	23007	53	6.0
Link V2	HILLINGDON ROAD	21402	22316	39	6.1
Link V3	HILLINGDON ROAD	22057	23000	52	6.0
Link V4	HILLINGDON ROAD	22064	23007	52	7.2
Link V5	HILLINGDON ROAD	21402	22316	52	6.5
Link V6	PARK ROAD	6045	6303	37	6.7
Link V7	PARK ROAD	6045	6303	33	5.7
Link V8	HILLINGDON ROAD	21402	22316	37	6.6
Link V9	HILLINGDON ROAD	21889	22824	31	6.6

Link	Description	24-hour AADT Flow		Mean Vehicle Speed (km/h)	Road Width (m)
		2016	2020		
Link V10	HILLINGDON ROAD	22064	23007	34	6.6
Link V11	HILLINGDON ROAD	22061	23004	32	6.6
Link V12	HILLINGDON ROAD	22061	23004	34	6.6
Link V13	HILLINGDON ROAD	22057	23000	43	8.0
Link V14	HILLINGDON ROAD	22064	23007	35	5.6
Link V15	HILLINGDON ROAD	22064	23007	27	6.2
Link V16	HILLINGDON ROAD	22064	23007	32	6.6
Link V17	HILLINGDON ROAD	22057	23000	56	7.5

Fleet composition data as a proportion of total flows on each link for cars, taxis, Light Goods Vehicles (LGV), Heavy Goods Vehicles (HGVs), buses and coaches and motorcycles is summarised below in Table A2.

Table A2 -Fleet Composition Data

Link		Proportion of Fleet (%)						
		Car	Taxi	LGV	Rigid HGV	Artic HGV	Bus and Coach	Motorcycle
Link 1	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2
Link 2	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2
Link 3	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2
Link 4	OXFORD ROAD	84.7	1.0	9.7	2.8	0.4	0.3	1.0
Link 5	OXFORD ROAD	84.7	1.0	9.7	2.8	0.4	0.3	1.0
Link 6	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2
Link 7	OXFORD ROAD	84.7	1.0	9.7	2.8	0.4	0.4	1.0
Link 8	SANDERSON ROAD	84.9	1.0	9.8	2.8	0.4	0.2	1.0
Link 9	SANDERSON ROAD	85.0	1.0	9.8	2.8	0.4	0.0	1.0
Link 10	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2
Link 11	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2

Link		Proportion of Fleet (%)						
		Car	Taxi	LGV	Rigid HGV	Artic HGV	Bus and Coach	Motorcycle
Link 12	OXFORD ROAD	83.7	0.2	9.9	2.5	0.9	1.7	1.2
Links for Verification								
Link V1	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V2	HILLINGDON ROAD	89.7	1.1	6.4	1.2	0.0	0.7	0.9
Link V3	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V4	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V5	HILLINGDON ROAD	89.7	1.1	6.4	1.2	0.0	0.7	0.9
Link V6	PARK ROAD	79.0	1.7	8.8	5.1	1.1	2.8	1.5
Link V7	PARK ROAD	79.0	1.7	8.8	5.1	1.1	2.8	1.5
Link V8	HILLINGDON ROAD	89.7	1.1	6.4	1.2	0.0	0.7	0.9
Link V9	HILLINGDON ROAD	87.7	1.0	6.3	1.2	0.0	2.9	0.9
Link V10	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V11	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V12	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V13	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V14	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V15	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V16	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9
Link V17	HILLINGDON ROAD	87.0	1.0	6.2	1.1	0.0	3.7	0.9

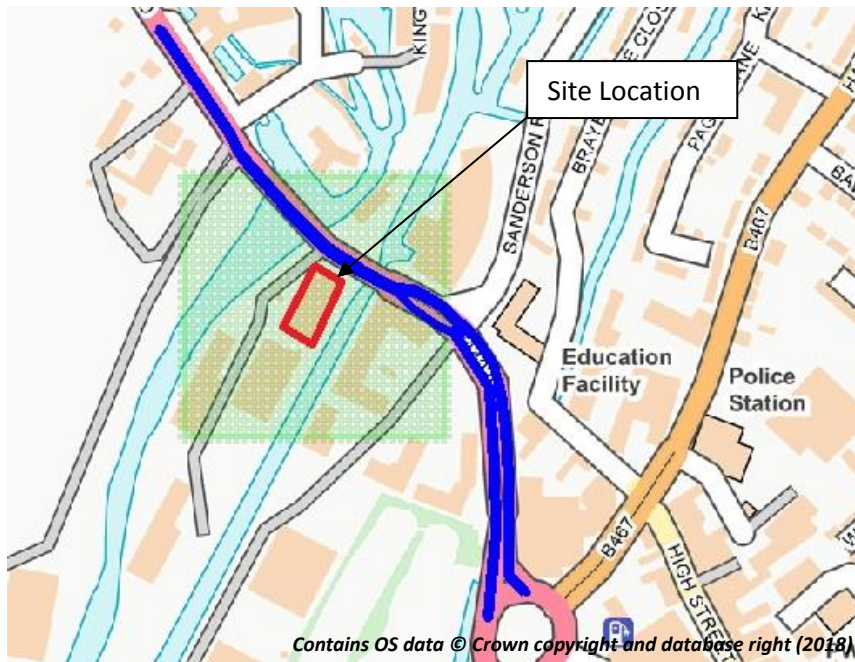


Figure A1 – Roads Included in Dispersion Model (blue)

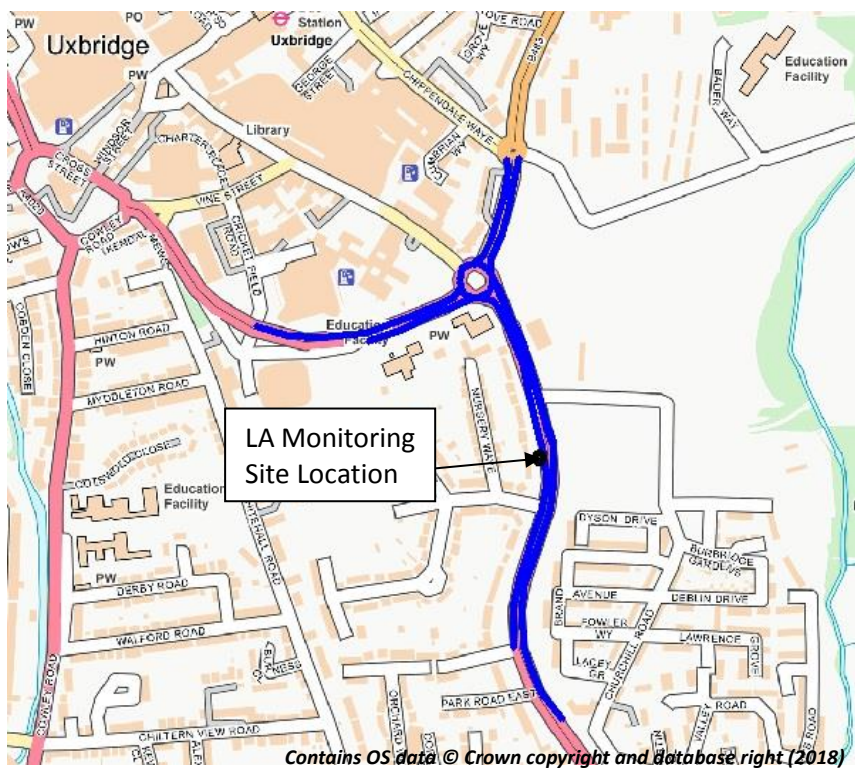


Figure A2 – Roads Included in Dispersion Model for Verification Site (HD212) (blue)