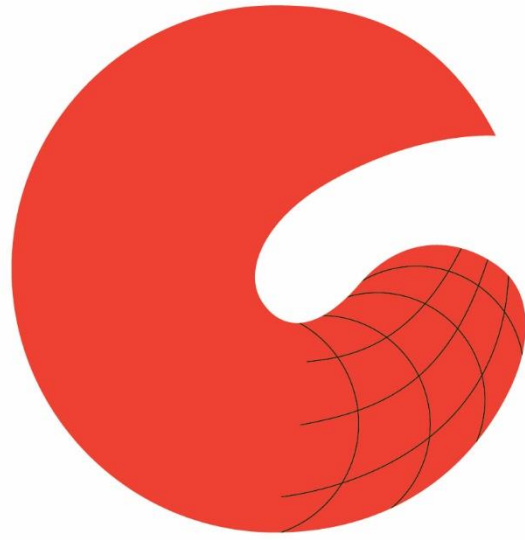




create
CONSULTING
ENGINEERS LTD

THE STAR, STAR ROAD, HILLINGDON
Air Quality Assessment – Scheme A – Revision B

THE STAR, HILLINGDON

Air Quality Assessment

Client: Crossier Planning Ltd

Engineer: Create Consulting Engineers Limited
220 Regency Court,
Upper Fifth Street,
Milton Keynes,
MK9 2HR

Tel: 01603 877010
Email: enquiries@createconsultingengineers.co.uk
Web: www.createconsultingengineers.co.uk

Report By: Muhammad Rajput, AMIENV, MIAQM

Checked By: Paul Zanna, Bsc (Hons)

Reference: SW/MR/JEB/P18-1668/03 – Revision B

Date: August 2019

THE STAR, STAR ROAD, HILLINGDON
Air Quality Assessment – Scheme A – Revision B

THE STAR, STAR ROAD, HILLINGDON

Air Quality Assessment

Revision B

Contents

- 1.0 Introduction
- 2.0 Legislation and Policy Context
- 3.0 Baseline Conditions
- 4.0 Dust Impact Assessment
- 5.0 Operational Impacts
- 6.0 Mitigation Measures
- 7.0 Conclusions
- 8.0 Disclaimer
- 9.0 References

Appendices

- A. Construction Dust Assessment

Registration of Amendments

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By
A 03/09/2019	Minor text change	MR	PZ
B 20/11/2019	Change of Unit numbers	GB	PZ

1.0 INTRODUCTION

Brief

Create Consulting Engineers have been commissioned by Crossier Planning Ltd to undertake an Air Quality Assessment in support of a planning application for a mixed-used development at Star Road and Uxbridge Road (A4020).

The Application Site

- 1.1 The proposed site is located on Star Road at its junction with Uxbridge Road (A4020) in the London Borough of Hillingdon. The site location can be seen in Figure 1.1, with the layout of the site shown in figure 1.2.

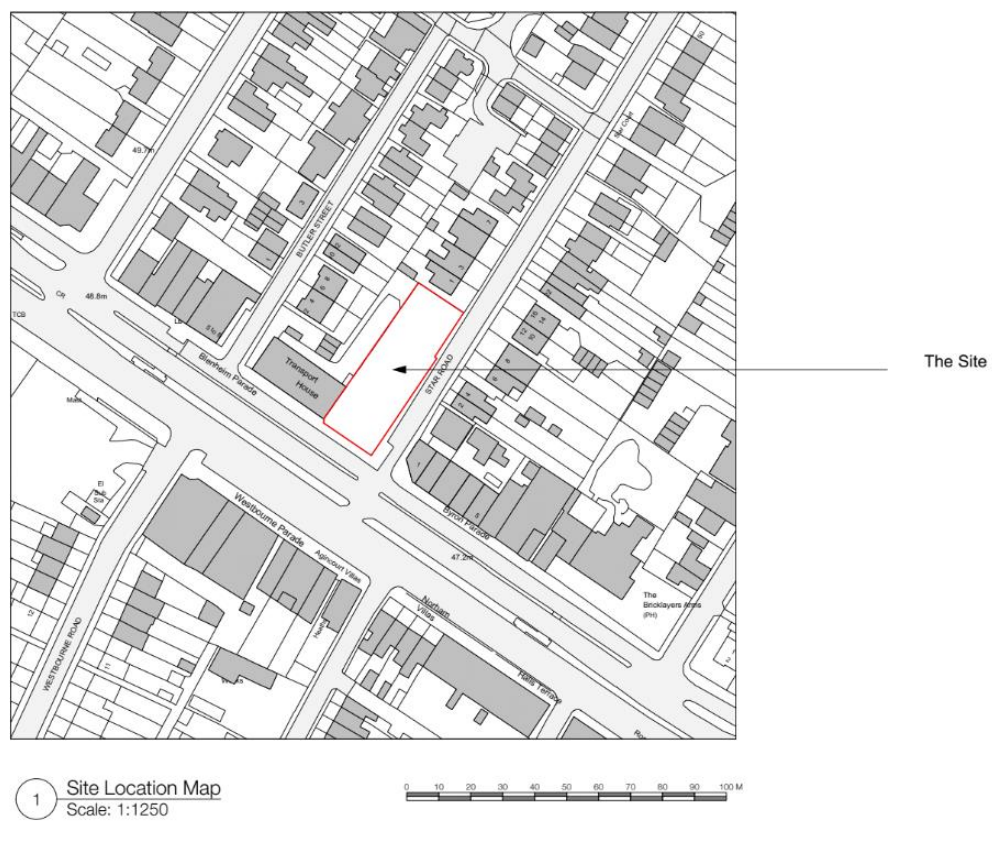


Figure 1.1: Site Location

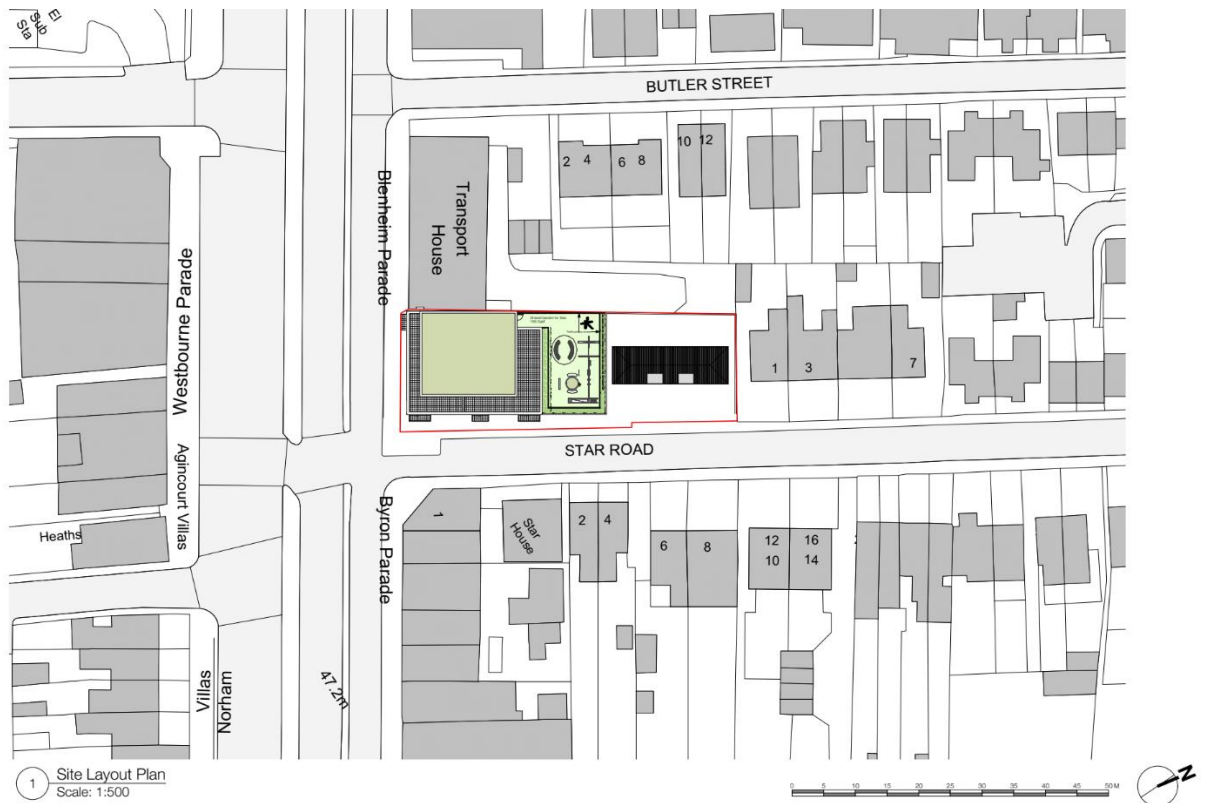


Figure 1.2: Site Layout Plan

The Development Proposal

- 1.2 The client plans to submit a planning application for a combined commercial and residential development. The site, which is currently vacant, was formerly in use as a public house and the development proposal envisages the redevelopment of the site to provide 65sqm commercial space, 10 apartments and 2 dwellings with associated infrastructure. This proposal can be seen at figure 1.2.

Assessment Scope

- 1.4 This AQA considers the potential air quality impacts associated with construction and operation phase of the development. The assessment considers dust from construction activities, and emissions from the combustion of fossil fuels due to transportation and heating, and power generation. The impact of the development upon local air quality have been considered in relation to National Air Quality Objectives (AQO) and EU Air Quality Standards to determine the potential significance of the impact.
- 1.5 Also, where necessary, the air quality assessment considers mitigation measures to reduce the effect of the proposed development on local air quality.
- 1.6 In terms of the construction impacts, construction related activities have the potential to generate emissions (dust, particulate matter (PM₁₀), and oxides of nitrogen (NO_x). These

impacts are assessed in accordance with the Institute of Air Quality Management (IAQM) best practice guidance (Holman et al, 2014).

- 1.7 As London Plan Policy 7.14 requires development proposals within Greater London to be at least 'air quality neutral'. An Air Quality Neutral have been assessed in line with SPG 2014.
- 1.8 The development site is located within an Air Quality Management Area (AQMA) where concentrations nitrogen dioxide (NO₂) and particulate matter, (PM₁₀) exceed the national air quality objectives (AQO) due to traffic and industrial sources. This assessment considers the exposure of future residents to the ambient air pollution levels. Where required, the assessment proposes mitigation measures to reduce the potential impact upon air quality and future residents.

2.0 LEGISLATION AND POLICY CONTEXT

- 2.1 The Environment Act 1995 placed a responsibility on the UK Government to prepare an Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland. The most recent version of the strategy (2007) sets out the current UK framework for air quality management and includes a number of AQOs for specific pollutants.
- 2.2 The 1995 Act also requires that Local Authorities “review and assess” air quality in their areas, following a prescribed timetable. The Review and Assessment process is intended to locate and spatially define areas where the UK AQOs are not being met. In such instances, the Local Authority is required to declare an AQMA, carry out a Further Assessment of air quality, and develop an Air Quality Action Plan (AQAP), which should include measures to improve air quality so that the objectives may be achieved in the future. The timetables and methodologies for carrying out Review and Assessment studies are prescribed in Defra Technical Guidance – Local Air Quality Management Technical Guidance (LAQM.TG, 2016) and London specific LAQM.TG (16).
- 2.3 Table 2.1 lists the objectives relevant to this assessment that are included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purposes of LAQM.

Pollutant	Air Quality Objective	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 times per year
	40 µg/m ³	Annual mean

Table 2.1: Air Quality Objectives (England)

- 2.4 The National Planning Policy Framework (NPPF) (Feb 2019) paragraph 181 notes that Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.
- 2.5 The National Planning Practise Guidance (NPPG) (Reference ID: 32-008-20140306), states that air quality assessments and resulting mitigation measures must be location specific and

proportionate to the nature/ scale of development proposed and the level of concern about air quality.

Dust

- 2.6 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). 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."

- 2.7 Enforcement of the Act, in regard to nuisance, is currently under the administration 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 (1990). Enforcement can insist that there be no dust beyond the boundary of the works. The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practice measures.

Regional Planning Policy

The London Plan (2016)

- 2.8 Policy 7.14 of The London Plan (2016) updated in 2017 (improving Air Quality), contains additional guidance for air quality in relation to planning decisions,
- 2.9 Development proposals should:
- a- *minimize increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (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 Air Quality Management Areas (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*

London Environment Strategy

- 2.10 The most recent London Environment Strategy which replaced Mayor's Air Quality Strategy (MAQS) for London was published in August 2017. The overarching aim of the Strategy is to reduce pollution concentrations and tackle the most urgent environmental challenges facing our city, as well as safeguard London's environment over the longer term. We need to ensure that London is greener, cleaner and ready for the future. The Strategy commits to the continuation of measures identified in the 2010 MAQS and sets out a series of additional measures.

Policy 4.1.1 *Make sure that London and its communities, particularly the most disadvantaged and those in priority locations, are empowered to reduce their exposure to poor air quality*

Policy 4.1.2 *Improve the understanding of air quality health impacts to better target policies and action*

Policy 4.2.3 *Reduce emissions from non-transport sources, including by phasing out fossil fuels*

Policy 4.2.4 *The Mayor will work with the government, the London boroughs and other partners to accelerate the achievement of legal limits in Greater London and improve air quality*

Policy 4.2.5 *The Mayor will work with other cities (here and internationally), global city and industry networks to share best practice, lead action and support evidence-based steps to improve air quality*

Policy 4.3.2 *The Mayor will encourage the take up of ultra-low and zero emission technologies to make sure London's entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines*

Policy 4.3.3 *Phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality*

Local Planning Policy

Hillingdon Local Plan Part-1

- 2.11 Hillingdon Council adopted its strategic policies Local Plan Part-I, in November 2012. This is an important document which contains the planning vision and strategy for the Borough. It identifies how the borough will guide future development in terms of the right amount and choice of housing, jobs and supporting infrastructure such as schools, health, leisure and community facilities, and ensuring that our town centres become vibrant, safe and welcoming places.
- 2.12 The Local Plan Part 1 - Strategic policies sets out the overall level and broad locations of growth up to 2026.

Policy E2: Location of Employment Growth

{.....} The Council will promote development in highly accessible locations that delivers sustainable travel patterns and contributes to the improvement of existing networks to reduce emissions and impacts on air quality. {...}

Policy BE1: Built Environment

{...}

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

{...}

Policy EM1: Climate Change Adaptation and Mitigation

The Council will ensure that climate change mitigation is addressed at every stage of the development process by:

{.....}

5. Promoting the use of decentralised energy within large scale development whilst improving local air quality levels.

6. Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimise other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions reductions.

{....}

Policy EM8: Land, Water, Air and Noise

{...}

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

All major development within the Air Quality Management Area (AQMA) should demonstrate air quality neutrality (no worsening of impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the 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 Air Quality Management Areas 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 may therefore require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements.

{...}

Hillingdon Local Plan Part-2

- 2.13 Once adopted it will deliver the detail of the strategic policies set out in the Local Plan Part 1: Strategic Policies (2012). Together they will form a comprehensive development strategy for the borough up to 2026. Part 2 has been through its final consultation process and is anticipated to be adopted in 2019.

POLICY DMEI3: Decentralised Energy

{...}

The Council will support the development of decentralised energy networks and energy centres in principle, subject to meeting the wider policy requirements of this plan and in particular on design and air quality.

Policy DMEI18: Air Quality Development proposals should as a minimum be at least "air quality neutral".

Where air quality levels are above national and European regulated levels, proposals will be required to demonstrate appropriate reductions in emissions to ensure that local air quality levels for both proposed and existing receptors are met in accordance with the relevant European Union (EU) limit values.

POLICY DMT2: Highways impacts

(A) Development proposals must be compatible with the safe and efficient movement of the highway and therefore must ensure that:

{...}

(ii) they do not contribute to the deterioration of air quality, noise or local amenity or safety of all road users and residents.

{...}

- 2.14 Reference has been made to these policies during the preparation of this Air Quality Assessment by assessing potential pollutant exposure across the site, and potential air quality impacts associated with the proposed development.

3.0 BASELINE CONDITIONS

- Hillingdon AQ Progress Report 2018 FINAL;
- Air Quality England website (www.airqualityengland.co.uk);
- DEFRA's national air quality background maps 2017 (<http://uk-air.defra.gov.uk/data>).

Local Air Quality Management

- 3.1 As required by the Environment Act (1995), LBH has undertaken. A review and Assessment of air quality within their administrative area. This process concluded that annual mean concentrations of NO₂ is above the relevant AQO. As such, an AQMA has been declared as:

"Hillingdon AQMA: 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.

- 3.2 The site is located within Hillingdon AQMA as shown in Figure 3.1, as a result there is the potential for the development to introduce future site users to elevated pollutant concentrations as well as cause impacts to air quality within this area. This has been considered within this report.

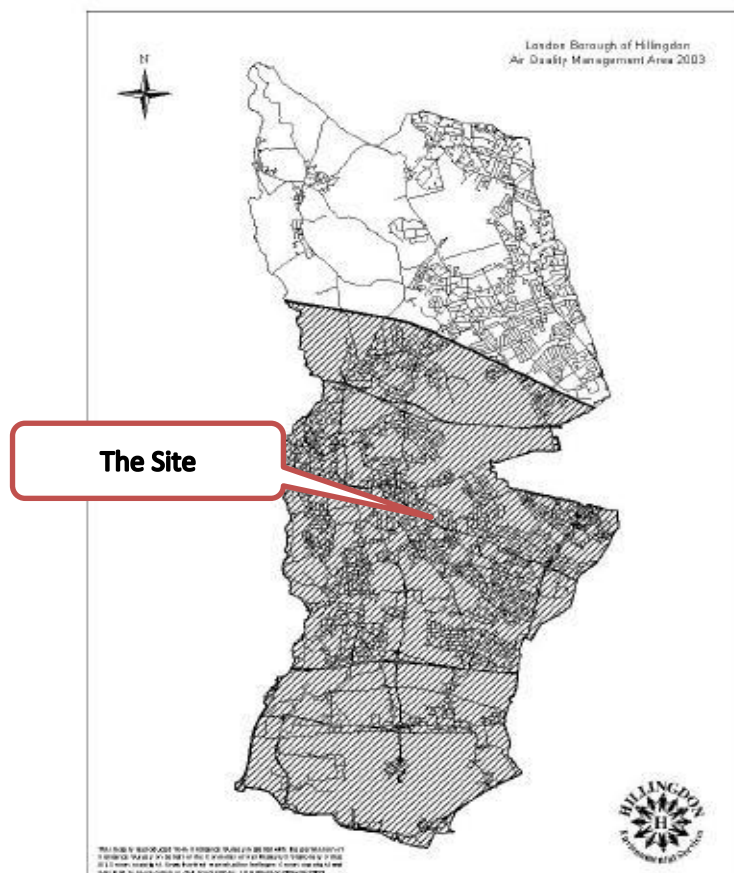


Figure 3.1 Hillingdon Borough of London and AQMA Location

- 3.3 LBH has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs and as such no further AQMAs have designated.
- 3.4 Annual reviews of air quality have shown that levels of NO₂ have not changed significantly over recent years. There is however a good record of implementation of the AQAP measures in areas for which the Council has control. An obvious problem arises because the most important sources in the Borough (the airport and the major road network) are not under the control of the Council.

Air Quality Monitoring Data

Automatic Monitoring Locations

- 3.5 LBH operates ten continuous automatic monitoring stations throughout the AQMA. The nearest automatic monitoring location Hillingdon -1 (HL1) is approximately 4.2km to the north east of the proposed development and is not the representative of the development site. Therefore, the monitoring station has been discounted.

Diffusion Tube Monitoring Locations

- 3.6 LBH also carry out passive NO₂ monitoring using diffusion tubes at numerous locations. The nearest monitoring sites to the proposed development are shown in Figures 3.2

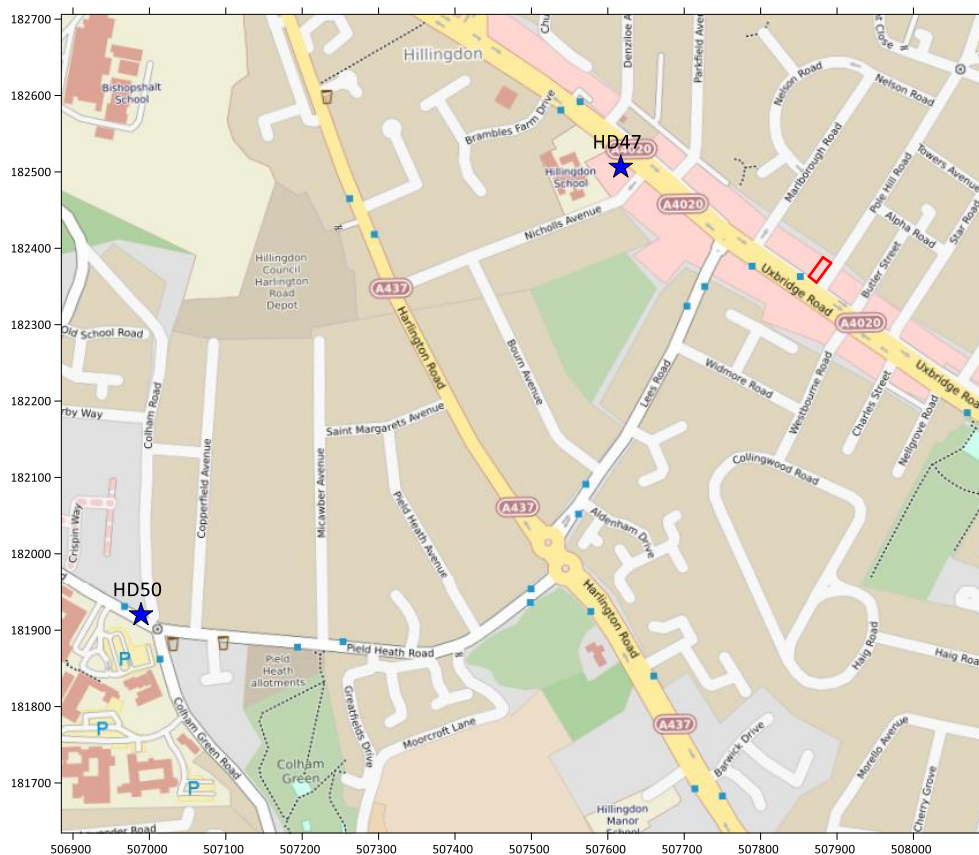


Figure 3.2: Location of Diffusion Tubes

Site ID	X (m)	Y (m)	Site Type	Annual Mean NO ₂ Concentrations µg/m ³		
				2015	2016	2017
HD47	507617	182506	Roadside	28.9	26.8	28.2
HD50	506989	181920	Roadside	40.6	32.3	36.1

Table 3.1: Details of Diffusion Tubes Monitoring Locations for NO₂

- 3.7 Table 3.1 indicates that there have been progressive results for the pollutant's concentration as HD47 being the representative of the site, shows declining levels of NO₂ in recent years.

Air Quality Modelling

- 3.8 In 2013 the GLA updated to (2016) produced air quality modelling maps showing NO₂ and PM₁₀ concentrations for each London Borough. These maps are based upon emissions data collected through the 2016 London Atmospheric Emission Inventory (LAEI).



Figure 3.3: Modelled 2016 Annual Mean NO₂ (Source: www.londonair.org.uk)

- 3.9 The maps provided as Figures 3.3 indicates that the site is located in an area where the annual mean NO₂ concentrations ranges from approximately 25 to 36µg/m³ at busy roads and junctions and therefore are below the annual mean objective (40 µg/m³).

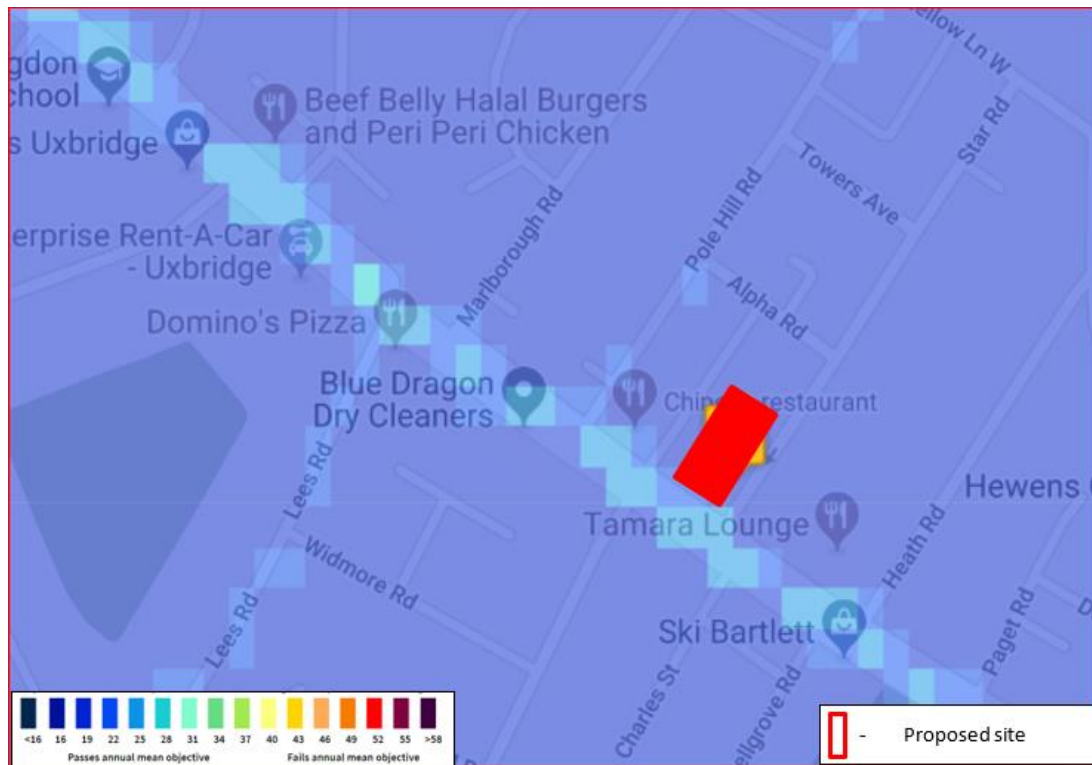


Figure 3.4: Modelled 2016 Annual Mean PM₁₀ (Source: www.londonair.org.uk)

- 3.10 The map (Figure 3.4) indicates that the site is located in an area where the annual mean PM₁₀ levels are approximately between 15 – 22µg/m³, which are well below the annual mean objective (40 µg/m³).

Mapped Background Pollution

- 3.11 The Defra website includes estimated background air pollution data for NO_x, NO₂, PM₁₀ and PM_{2.5} for each 1km by 1km OS grid square. Background pollutant concentrations are modelled from the base year of 2017 and based on ambient monitoring, meteorological data from 2017 and then includes projections for future years. Projected pollutant concentrations for the year 2017 and covering the OS grid square in which the proposed development site lies, (origin 507960 & 182290) are shown in Table 3.2 below. Annual mean concentrations are within the relevant objective limits for NO₂ and PM₁₀. There are no ambient air quality limits for NO_x and PM_{2.5}.

Pollutant	2017 Annual Mean (µg/m ³)
NO _x	35.96
NO ₂	23.29
PM ₁₀	16.53
PM _{2.5}	11.55

Table 3.2: 2017 Annual Mean Background Concentrations of NO_x, NO₂, PM₁₀, and PM_{2.5}

Air Quality Focus Area

- 3.12 The GLA has identified 187 Air Quality Focus Areas (AQFA) within London. These are locations where the annual mean NO₂ concentrations breach the national air quality objective (40µg/m³), and where human exposure to air pollution is high. Seventeen of these focus areas are located within Hillingdon Borough of London. AQFA's are tools to help London Boroughs to target action in the most problematic areas. In this case, the development site located to the east and west of Uxbridge Road. Figure 3.5 shows the development site in relation to AQFAs.

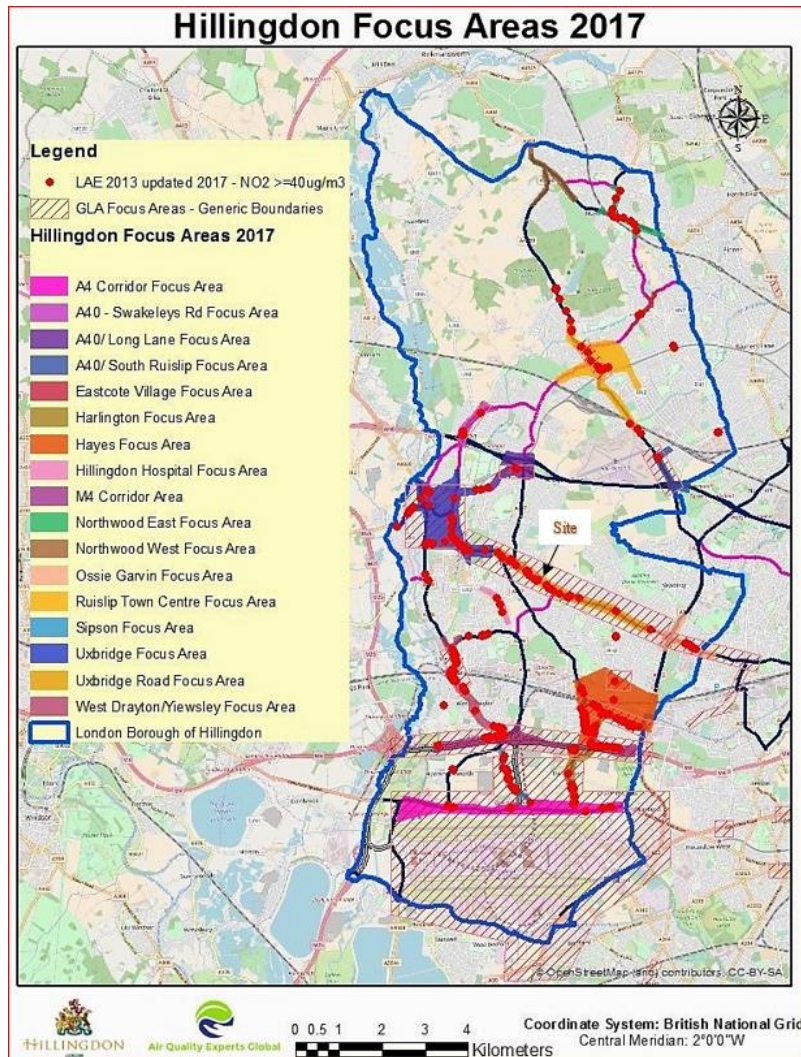


Figure 3.5: LBH Air Quality Focus Area 2017 in relation to the development site

4.0 DUST IMPACT ASSESSMENT

- 4.1 During the site clearance and construction phases, there is the potential for emissions of dust to cause annoyance and nuisance to sensitive receptors located close to the site.
- 4.2 Potential dust impacts associated with construction activities have been assessed in accordance with guidance from the IAQM (2014). The IAQM provides guidance on a five-step process to assess the potential impacts of construction dust pre-mitigation, provide mitigation measures specific to the risk and assess the post-mitigation impacts.
- 4.3 There are a number of sensitive receptors within close proximity of the site, with residential buildings (10 – 100 receptors) being within approximately 20m of the site. Residential and retail properties are located less than 100m from site with (100 or More Receptors). These could potentially be affected by dust emissions in relation to any of the above stages.
- 4.4 As detailed in Table 3.2, background concentrations of PM₁₀ is 16.53 µg/m³, which is well below the UK AQO of 40 µg/m³.
- 4.5 A review of the Defra Magic database shows that there are no ecological receptors within 50m of the site.
- 4.6 A dust assessment is required due to human receptors being within 350m of the site boundary and specific mitigation measures recommended.
- 4.7 The assessment procedure follows the following framework:
1. Screen the requirement for a more detailed assessment;
 2. Assess the risk of dust impacts of the two phases of construction (construction and trackout), taking into account:
 - i. Dust Emission Magnitude;
 - ii. Sensitivity of the area; and
 - iii. Risk of Impact
 3. Determination of the site-specific mitigation measures for the potential activities;
 4. Examine the residual effects and determine whether or not these are significant; and
 5. Prepare the Construction Dust Assessment.

4.8 The construction activities associated with the proposed development can be separated into two stages:

- Earthworks;
- Construction; and
- Trackout.

4.9 In February 2014, the IAQM published guidance on how to assess and mitigate the impacts of dust emissions from construction sites. This guidance has been followed for the production of a construction dust risk assessment, included in Appendix A.

4.10 A summary of the dust risk impact assessment can be seen below, with further details presented in Appendix A.

4.11 Each activity has been assessed individually to determine a Dust Emissions Magnitude (DEM) in terms of the scale and nature of works. The level of magnitude is assessed against the sensitivity of the site in order to determine the potential risk of dust impacts. A summary of the assessment is provided in table 4.1 and the full risk assessment is included in Appendix A.

Potential Impact	Risk	
	Construction	Trackout
Dust Soiling	Medium	Medium
Human Health	Low	Low

Table 4.1: Summary of Potential Dust Risk Impact

4.12 The above summary demonstrates that the proposed development, pre-mitigation, has the potential to result for medium effect upon sensitive receptors from dust soiling and low impact on human health.

4.13 The mitigation measures detailed in Appendix A, have been recommended to ensure that the residual effect of construction dust on the receptors and surrounding area will be temporary and, where possible, **negligible**.

5.0 OPERATIONAL IMPACTS

Traffic Emissions

- 5.1 The EPUK & IAQM (2017) Land-Use Planning and Development Control: Planning for Air Quality guidance provides indicative criteria for the requirement of an Air Quality Impact Assessment. The following criteria has been considered for this assessment:

Step 1

- If any of the following apply to the development:
 - *Contains 10 or more residential units or a site area of more than 0.5ha; or*
 - *Contains more than 1,000 m² of floor space for all other uses or a site area greater than 1ha*
- Coupled with any of the following:
 - *The development has more than 10 parking spaces; or*
 - *The development will have a centralised energy facility or centralised combustion process*

Step 2

- A change of LGV (light goods vehicle) flow of:
 - *More than 100 AADT within or adjacent to an AQMA; or*
 - *More than 500 AADT elsewhere.*
- A change of HGV (HGV goods vehicle) flow of:
 - *More than 25 AADT within or adjacent to an AQMA; or*
 - *More than 100 AADT elsewhere.*

- 5.2 Should these criteria not be met, the guidance document considers air quality impacts associated with a scheme will be negligible and no further assessment is required.

- 5.3 The proposal is for a development of an existing plot of land into residential properties with parking. Therefore, this proposal meets the requirements of step 1.

- 5.4 The proposed development states that 12 parking spaces will be allocated to the scheme. A transport statement was produced by Caneparo Associates who state that:

'Given the scale and nature of the planning application proposal, the number of person movements likely to be generated by the proposed residential units will be low and will not have any material impact on the operation of the local highway or public transport network.'

- 5.5 London Plan Policy 7.14 requires development proposals within Greater London to be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (e.g. developments situated within an AQMA). A method for assessing this is outlined in the Sustainable Design and Construction SPG (April, 2014).

Air Quality Neutral Assessment

- 5.6 The Guidance sets out Building Emissions Benchmarks (BEB) and Transport Emissions Benchmarks (TEB) based upon the Gross Floor Area (GFA m²) and on-site emissions of NO_x and PM₁₀. Developments that do not exceed these benchmarks will be considered to avoid any increase in NO_x and PM₁₀ emissions. BEB and TEB for NO_x and PM₁₀ for all land use classes are presented in Table 5.1 and Table 5.2.

Land Use Class	NO _x (g/m ²)	PM ₁₀ (g/m ²)
Class A1	22.6	1.29
Class A3 - A5	75.2	4.32
Class A2 and Class B1	30.8	1.77
Class B2 - B7	36.6	2.95
Class B8	23.6	1.90
Class C1	70.9	4.07
Class C2	68.5	5.97
Class C3	26.2	2.28
D1 (a)	43.0	2.47
D1 (b)	75.0	4.30
Class D1 (c -h)	31.0	1.78
Class D2 (a-d)	90.3	5.18
Class D2 (e)	284	16.3

Table 5.1: Building Emissions Benchmarks Emissions for Different Land Use Classes

**Source: Air Quality Neutral Planning Support Update: GLA 80371, April 2014*

Land Use Class	Central Activity Zone (CAZ)	Inner	Outer
NO_x (g/m²/annum)			
Retail (A1)	169	219	249
Office (B1)	1.27	11.4	68.5
NO_x (g/dwelling/annum)			
Residential (C3)	234	558	1553
PM₁₀ (g/m²/annum)			
Retail (A1)	29.3	39.3	42.9
Office (B1)	0.22	2.05	11.8
PM₁₀ (g/dwelling/annum)			
Residential (C3)	40.7	100	267

Table 5.2: Transport Emissions Benchmarks Emissions for Different Land Use Classes

**Source: Air Quality Neutral Planning Support Update: GLA 80371, April 2014*

Building Emissions

- 5.7 As the sustainability assessment predicts that due to minor development, CHP is not an ideal source of heating instead individual boilers will be enough for the heating of the building. Based on this information, building emissions have run for this assessment.

Transport Emissions

- 5.8 The assessment considers NO_x and PM₁₀ emissions from delivery vehicles associated with the retail use of the development. The residential use will not generate more than 17 two-way traffic flows, so this have been used within the assessment. This have been calculated in Table 5.3 and Table 5.4 below,

Land Use	Daily Vehicle Trips	Average Distance (km)*	Pollutant	Vehicle Emissions (kg/annum)
Retail	0	9.3	NOx	16.2
			PM ₁₀	2.8
Residential	51	3.7	NOx	1320.1
			PM ₁₀	277.0
Building energy Emissions (kg/annum)			NOx	23.7
			PM ₁₀	0.5

Table 5.3: Calculations of transport emissions

*Based on the London Travel Survey Demand (LTSD) destination. These are based on a straight line between the origin and destination of a trip not the actual distance travelled.

Land Use	Pollutant	Emission Factor	GIA (m ²)	TEB (kg/annum)
Retail (g/m ² /annum)	NO _x	249	850	1336.2
	PM ₁₀	42.9		229.7
Residential (g/dwelling/annum)	NO _x	1553.0	65	249.0
	PM ₁₀	267.0		42.9
Total NO _x TEB (kg/annum) + Energy				183.8
Total PM ₁₀ TEB (kg/annum) Energy				31.9

Table 5.4: Calculations of the total Transport Emissions Benchmark (TEB)

- 5.9 Transport emission were calculated using the Emission Factor Toolkit v9.0¹. Results are presented in Table 5.3 and calculations of Transport Emissions Benchmarks (TEB) are presented in Table 5.4.

¹ <http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

Scenario	Source	Annual NOx Emissions (kg/yr)	Annual Total NOx Emissions (kg/yr)	Annual PM10 Emissions (kg/yr)	Annual Total PM10 Emissions (kg/yr)
Benchmark	Road Vehicles	1336.2	1360.0	229.7	229.7
	Energy	23.7		-	
Development Emissions	Road Vehicles	63.4	63.9	11.4	11.4
	Energy	0.5		-	
Difference	Road Vehicles	-1272.9	-1296.1	-218.3	-218.3
	Energy	-23.2			

Table 5.5 Comparison of TEB and BEB for building and energy emissions

5.10 Table 5.5 show the comparison and difference for TEB and BEB. Total NOx emission for building and transport is -1296.1kg/yr and total PM₁₀ emission for building and transport source is -218.3kg/yr.

5.11 Results indicate that NOx and PM₁₀ emissions are within the relevant benchmarks and therefore no mitigation is required, and the proposed development is **“Air Quality Neutral”**.

NOx to NO₂ trends

5.12 All combustion processes produce oxides of nitrogen (NOx). In London, road transport and heating systems are the main sources of these emissions. NOx is primarily made up of two pollutants - nitric oxide (NO) and nitrogen dioxide (NO₂)⁹

5.13 Urban background and roadside nitrogen dioxide (NO₂) pollution has shown long-term improvement. In 2018 the lowest average annual mean concentrations since the start of the time series for both roadside and urban background monitoring sites were recorded.¹⁰

5.14 There were on average fewer hours of moderate or higher levels of nitrogen dioxide pollution in 2018 compared with 2017 at roadside sites. This continues a trend for reduction in short-term moderate or high NO₂ pollution since 2007, mainly due to reductions in this measure at monitoring sites in London.

5.15 This down trend can be observed from Table 3.1 and Table 3.2 for NOx and NO₂ concentrations. It should be noted that lower floors are proposed for retail services but not in sensitive use so based on this, proposal will not breach AQOs it is also predicted that concentrations will not exceed the 1-hour mean AQO for NO₂ across the development site in future years due to continuous improved Air Quality in London.

6.0 MITIGATION MEASURES

Construction Dust

- 6.1 A construction dust assessment has been completed for the proposed development in accordance with IAQM guidance and is presented in Appendix A.
- 6.2 A range of measures are suggested, which could be utilised during the construction phase, and are set out in Appendix A.

Construction Traffic and Plant

- 6.3 There is potential for air pollutant impacts to arise from construction plant and vehicles associated with the scheme.
- 6.4 The following traffic and plant mitigation measures could be considered during the construction phase:
- All vehicles should switch off engines when stationary, no idling vehicles;
 - On-road vehicles to comply with the requirements of the Low Emission Zone and the London NRMM standards, where applicable;
 - All non-road mobile machinery (NRMM) to use ultra-low sulphur diesel (ULSD) where available;
 - Minimise the movement of construction traffic around the site;
 - Maximising efficiency (this may include alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing);
 - Vehicles should be well maintained and kept in a high standard of working order;
 - Avoid the use of diesel or petrol-powered generators by using mains electricity or battery powered equipment where possible; and
 - Locate plant away from boundaries close to residential areas.

Operational Phase

- 6.5 As site is located within AQMA so potential best practice mitigation options, are listed below, please note this is not an exhaustive list but provides a guide as to some options available.
- 6.6 All techniques have financial implications and may therefore affect scheme viability, as such the below techniques should be considered and discussed with LBH prior to the completion of the proposed development.
- All gas-fired boilers to meet a minimum standard of <40mgNO_x/kWh

- A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers

6.7 If the above techniques are appropriate and can be implemented into the scheme, this will further reduce potential impacts associated with the proposed development.

7.0 CONCLUSIONS

- 7.1 Create Consulting Engineers have been commissioned by Crossier Planning Ltd to undertake an Air Quality Assessment in support of a planning application for a mixed-used development at Star Road and Uxbridge Road (A4020).
- 7.2 The proposed site is currently vacant, proposal envisages the redevelopment of the site to provide 65sqm commercial space, 10 flats and 2 dwellings with associated infrastructure.
- 7.3 The proposed development is located within an AQMA, declared by LBH. Due to elevated exhaust levels, air quality assessment was required to quantify the exposure around the nearby receptors.
- 7.4 A construction dust assessment has been undertaken for the construction phase associated with the proposed development and in accordance with IAQM and GLA guidance on the assessment of dust from construction (Appendix A).
- 7.5 Mitigation measures have been proposed for construction activities associated with the proposed development. Following the successful implementation of the suggested mitigation measures, the residual effects of construction dust and emissions from construction plant/vehicles upon the local area and sensitive receptors although adverse, will be temporary and **not significant**.
- 7.6 Air quality modelling undertaken by the GLA indicates the development site is below the National AQO ranging from **15–36µg/m³** for NO₂ however the immediate surrounding area on the roadside may exceed the National AQO for NO₂. Also, PM₁₀ ranging from **15 – 22µg/m³** which is well below the AQO limits. As discussed in section 5.12 that due to recent declining NO_x trends, there are predictions that air quality will not exceed in future years.
- 7.7 However, Potential mitigation measures have been recommended as part of the proposals to offset any potential impacts as the site is within an AQMA.
- 7.8 Following the London Plan Policy, Air Quality Neutral assessment was undertaken. Results indicated that overall NO_x and PM₁₀ emissions were below the benchmark and site was considered “Air Quality Neutral”.
- 7.9 The overall significance of potential impacts was therefore determined to be **not significant**, in accordance with the EPUK and IAQM guidance.
- 7.10 Based on the assessment results based on the assessment results and implementation of best practice techniques, air quality is not considered a constraint to planning consent for the proposed development.

8.0 DISCLAIMER

- 8.1 Create Consulting disclaims any responsibility to the Client and others in respect of any matters outside the scope of this report.
- 8.2 The copyright of this report is vested in Create Consulting Engineers Ltd and the Client. The Client, or his appointed representatives, may copy the report for purposes in connection with the development described herein. It shall not be copied by any other party or used for any other purposes without the written consent of Create Consulting Engineers Ltd or the Client.
- 8.3 Create Consulting Engineers Ltd accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

9.0 REFERENCES

- 9.1 *Control of dust and emissions from construction and demolition: Best Guidance Practice*. Greater London Authority and London Councils (2006).
- 9.2 *Sustainable Design and Construction Supplementary Planning Guidance*. Greater London Authority, 2014.
- 9.3 *National Planning Policy Framework*. Department of Communities and Local Government, 2018.
- 9.4 *EPUK & IAQM Land-Use Planning and Development Control: Planning for Air Quality*, London, 2017.
- 9.5 Holman et al. *IAQM Guidance on the assessment of dust from demolition and construction*, Institute of Air Quality Management, London, 2014.
www.iaqm/wpcontent/uploads/guidance/dust_assessment.pdf.

APPENDICES

APPENDIX A

CONSTRUCTION DUST ASSESSMENT

CONSTRUCTION DUST ASSESSMENT

- A.1 The construction dust assessment has been completed in accordance with 2014 IAQM guidance and follows the procedure as outlined in Section 3 of this report.

Screen the Need for a Detailed Assessment

- A.2 The following screening criterion has been applied to the assessment: An assessment will normally be required where there is:

- a 'human receptor' within:
 - 350m of the boundary of the site; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- an 'ecological receptor' within:
 - 50m of the boundary of the site; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

- A.3 There are a number of human receptors within 350m of the site boundary but no ecological receptors within 50m of the site. However, a dust assessment is still required due to the proposed development location meeting some of the above criteria.

Assess the Risk of Dust Impacts

- A.4 It has been assumed that demolition is still required to be undertaken on-site and has therefore been included within this assessment for completeness. The activities associated with the proposed development can be separated into three stages:

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

- A.5 The assessment of the risk of dust impacts was completed in two stages:

- Determine the potential dust emission magnitude; and
- Determine the sensitivity of the area to dust impacts.

- A.6 The potential dust emission magnitude is small for demolition, construction and trackout according to the criteria presented in Table A.1 and professional judgement.

Construction Activity	Dust Emission Magnitude Scale		
	Small	Medium	Large
Demolition	Total building volume <20,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.	Total building volume 20,000 m ³ – 50,000 m ³ , potentially dusty construction material, demolition activities 10-20m above ground level	Total building volume >50,000 m ³ , potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level.
Earthworks	Total site area <2,500m ² , soil type with large grain size, <5 heavy earth moving vehicles active at one time, bunds <4m high, total material moved <20,000t, works during wetter months.	Total site area 2,500-10,000m ² , moderately dusty soil type, 5-10 heavy earth moving vehicles active at one time, bunds 4-8m high, total material moved 20,000-100,000t.	Total site area >10,000m ² , potentially dusty soil type, >10 heavy earth moving vehicles active at one time, bunds >8m high, total material moved >100,000t.
Construction	Total building volume <25,000m ³ , construction material with low potential for dust release.	Total building volume 25,000-100,000m ³ , potentially dusty construction material, on site concrete batching.	Total building volume >100,000m ³ , on site concrete batching, sandblasting.
Trackout	<10 HDV* outwards movements in any one day, surface material with low potential for dust release, unpaved road length <50m.	10-50 HDV outward movements in any one day, moderately dusty surface material, unpaved road length 50-100m.	>50 HDV outward movements in any one day, potentially dusty surface material, unpaved road length >100m.
* HDV – Heavy Duty Vehicle (>3.5t), Note – In each case, not all the criteria need to be met, and that other criteria may be used if justified.			

Table A.1: Dust Emission Magnitude Criteria

A.6 The completed assessment of Dust Emission Magnitude is shown in Table A.2 below.

Construction Activity	Dust Emission Magnitude	Justification
Demolition	small	Total building volume <20,000 m ³ ,
Construction	small	Total building volume <25,000m ³
Trackout	small	Estimated <10 outwards movements of heavy vehicles per day.

Table A.2: Dust Emission Magnitude Assessment

A.7 The sensitivity of the area has been assessed in relation to a number of factors such as; the specific sensitivities of receptors in the area, the proximity and number of those receptors and

in the case of PM₁₀, the local background concentration and also following the significance criteria in Tables A3, A4 and A5 below.

Receptor Sensitivity	Number of Receptors	Distance from the source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table A3: Sensitivity of the Area to Dust Soiling Effects of People and Property

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	>32 µg m ⁻³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg m ⁻³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg m ⁻³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg m ⁻³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the Area to Human Health Impacts

A.8 In addition to Tables A3 and A4 any site specific factors have been taken into account when defining the sensitivity of the area:

- 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 the receptors; and
- the duration of the potential impact, as a receptor may become more sensitive over time.

A.9 The completed pre-mitigation impact risk assessment, incorporating the sensitivity of the area and the dust emissions magnitude for the demolition and four construction activities is shown in Table A6 below.

Potential Impact	Risk		
	Demolition	Construction	Trackout
Dust Soiling	Low	Medium	Medium
Human Health	Low	Low	Low

Table A6: Summary of Dust Risk (pre-mitigation)

- A.10 The overall risk of dust soiling was considered medium due to the number of receptors in close proximity to the proposed site. The overall human health risk was considered low due to the low PM₁₀ background concentrations in the local area (16.53 µg m⁻³).

Site-specific Mitigation

- A.11 From the identification of the risk of impacts with no mitigation applied in Table A6, it is possible to determine the specific mitigation measures that can be applied in relation to the level of risk associated with the construction activities. The mitigation measures described below are suggested as measures that should be included in a site-specific Construction Management Plan (CMP).

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).
- 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.
- If wind speed is too high or blowing towards nearby house etc. then all demolition works to stop until more suitable conditions arise;
- Stock piles to be covered with sheeting etc. if other control measures don't work;
- Dust monitoring to take place at all times during demolition works
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Construction:

- Avoid scabbling (roughening of concrete surfaces)
- 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.
- 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 power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Trackout:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site log book.

General Mitigation Measures:

- Ensure regular cleaning of hardstanding surfaces using wet sweeping methods;
- Display the head or regional office contact information, and the name and contact details of person(s) accountable for air quality on the site boundary;
- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Log all air quality complaints, identify the cause(s), take appropriate measures to reduce emissions in a timely manner, and record all measures taken. Make the complaints log available to the Local Authority when requested;
- Carry out regular on-site and off-site inspections to monitor dust soiling effects, with cleaning to be provided if necessary. Increase the frequency of inspections when activities with a high potential to produce dust are being carried out;
- Erect barriers around the site, any dusty activities and stockpiles (the last of which should be covered);
- Screen areas of the building, where dust producing activities are taking place, with debris screens or sheeting;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Remove materials that have a potential to produce dust as soon as possible, unless they are being re-used. If they are to be re-used, on site covers should be used;
- Ensure all vehicles switch off engines when stationary, so that there are no idling vehicles;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine sprays on such equipment wherever possible;
- Avoid bonfires and the burning of waste materials; and
- Special provisions will apply for any materials containing asbestos. The safety method statement should outline the control measures necessary to minimise the risks to an acceptable level and all statutory notices will be placed with the Health and Safety Executive (HSE).

A.12 It is important that attention is paid to any construction activity that takes place in close proximity to the site boundary, and specifically in relation to the closest sensitive receptors.

- A.13 The implementation of the specific mitigation measures given above within a CMP will ensure that the potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that through the use of effective mitigation, the effects of dust from construction activity will normally be considered not significant.

Determine Significant Effects

- A.14 The IAQM does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'