Air Quality Assessment

Holborn Links, Project 5

SWECO

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1. Executive Summary

Sweco UK Ltd ('Sweco') was commissioned by Workman LLP on behalf of Hogarth Properties S.A.R.L ('Client') to prepare a qualitative Air Quality Assessment (AQA) for proposed remedial work and Cat A refurbishment of offices ('Proposed Development') at existing buildings at 20-21, 22 Southampton Place and 46-47 Bloomsbury Square, Holborn, London ('Site').

With regard to impacts during construction, a qualitative assessment on the construction phase activities has been carried out following the relevant IAQM guidance. This identified that there is a 'Low Risk' of dust soiling impacts and 'Negligible Risk' of increases in particulate matter concentrations that could affect human health due to construction activities. Through good Site practice and the implementation of suitable mitigation measures, the effect of dust and particulate matter releases would be significantly reduced. The residual effects of the construction phase on air quality are considered to be **'Negligible'**.

Regarding the suitability of air quality at the Site for its intended use, monitored pollutant concentrations in the vicinity of the Site are below the relevant health-based objectives. As such, the future occupants would not be exposed to unacceptable air quality and the Site is deemed suitable for its proposed future use in this respect.

Regarding the impact of the proposals on the surrounding area, a screening assessment of the operational phase was undertaken in line with EPUK/IAQM guidance. The conclusion of this assessment is that the impact of the Proposed Development on local air quality would be **'Insignificant'**.

The air quality effect of the Proposed Development is considered to be **'Not Significant'**. The Proposed Development does not, in air quality terms, conflict with national or local policies. On implementation of the recommended mitigation measures, there are no constraints to the Proposed Development in the context of air quality.

2. Introduction

2.1 General

Sweco UK Ltd ('Sweco') was commissioned by Workman LLP on behalf of Hogarth Properties S.A.R.L ('Client') to prepare a qualitative Air Quality Assessment (AQA) for proposed remedial work and Cat A refurbishment of offices ('Proposed Development') at existing buildings at 20-21, 22 Southampton Place and 46-47 Bloomsbury Square, Holborn, London ('Site').

2.2 Location and Description

The Site is located in Holborn, central London. The approximate central grid reference for the Site is 530382 (Easting) and 181590 (Northing). The Site consists of three directly adjacent terrace buildings on Southampton Place, and a fourth and fifth building around the corner on Bloomsbury Square, separated from the first three buildings by a single unit. Taken together, the Site is bounded to the east by Southampton Place, to the north by Bloomsbury Square, and to the south and west by other buildings.

The Site lies within the administrative area of the London Borough of Camden (LBC).

2.3 Objectives

This report aims to provide an overview of relevant air quality legislation and guidance and an appraisal of baseline air quality at the Site using the most up-to-date publicly available data. It furthers aims to provide an assessment of the impact of activities during the construction and operational phases of the Proposed Development on local air quality, as well as the suitability of the Site for future occupants. Mitigation measures are recommended, where appropriate.

3. Air Quality Legislation, Policy & Guidance

3.1 International Legislation and Policy

The European Directive (2008/50/EC)[1], sets legally binding limits for concentrations of outdoor air of major air pollutants that impact public health such as particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2). The European Directive is implemented in the UK under the Air Quality Standards Regulations 2010[2].

The obligations under the Air Quality Standards Regulations 2010 are separate from those of the 2000[3] and 2002[4] UK Regulations because local authorities in the UK will only have powers to manage some of the pollutants in the Air Quality Standards Regulations 2010, as most of the source pollutants will be managed by the Environment Agency under the IPPC Regime. Therefore, the obligation to meet the Air Quality Standards Regulations 2010 rests with the Secretary of State for Environment.

Throughout this assessment EU limit values have applied notwithstanding the UK's withdrawal from the European Union and the end of the Transition Period. The limit values continue to have legal effect by virtue of EU Exit legislation.

The Environment Bill 2021[5] gives the Secretary of State a power to set long-term, legally binding environmental targets of at least 15 years in duration, across the breadth of the natural environment. Following that, it is not known if a different approach to limit values will be taken. Long-term targets will be set by regulations subject to the affirmative procedure (requiring a binding vote in both Houses of Parliament). The statutory instruments for the first set of targets must be brought forward by 31st October 2022, at the latest. Thus, EU limit values will continue to apply unless and until Parliament legislates otherwise.

3.2 National Legislation and Policy

3.2.1 Local Air Quality Management

Part IV of the Environment Act 1995[6], requires the UK Government to publish an Air Quality Strategy and local authorities to review, assess and manage air quality within their areas. This is known as Local Air Quality Management (LAQM)[7]. The 2007 Air Quality Strategy[8] establishes the policy for ambient air quality in the UK. It includes the National Air Quality Objectives (AQOs) for the protection of human health and vegetation for 11 pollutants. Those AQOs included as part of

[1] Directive 2008/50/EC of the European Parliament and of the Council. May 2008. Official Journal of the European Union.

[2] Air Quality Regulations 2010 – Statutory Instrument 2010 No. 1001

[3] The Air Quality (England) Regulations 2000 no. 928. Stationary Office.

[4] The Air Quality (England) (Amendment) Regulations 2002 No. 4034. Stationary Office.

[5] Environment Bill 2021.

[6] Environment Act 1995.

[7] Local Air Quality Management Technical Guidance LAQM.TG (16). April 2016. Department for Environment, Food and Rural Affairs

[8] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. 2007. Department for Environment, Food and Rural Affairs

LAQM are prescribed in the Air Quality (England) Regulations 2000 and the Air Quality (Amendment) (England) Regulations 2002. TABLE 3.1 presents the AQOs for Nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of 10µm or less (PM_{10}), the key pollutants of concern in relation to vehicle emissions.

TABLE 3.1: RELEVANT OBJECTIVES SET OUT IN THE AIR QUALITY STRATEGY

Pollutant	Concentrations	Measured As
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times per year	One-hour mean
	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3 not to be exceeded more than 35 times per year	24-hour mean
	40µg/m^3	Annual mean
Particulate Matter ($PM_{2.5}$)	25µg/m^3	Annual Mean

The Air Quality Strategy also introduced a new policy framework for tackling fine particles ($PM_{2.5}$) including an exposure reduction target. However, although EU Directive 2008/50/EC includes a new regulatory framework for $PM_{2.5}$ this pollutant is not included within LAQM, therefore, there is no requirement to assess this pollutant unless as part of an Environmental Impact Assessment (EIA). However, to ensure a robust assessment $PM_{2.5}$ has been considered in this assessment. The objective for this pollutant has been included in TABLE 3.1.

The NAQOs apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within the Local Air Quality Management Technical Guidance 2016 (LAQM.TG (16)) issued for Local Authorities, on where the AQOs apply as detailed in TABLE 3.2. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

TABLE 3.2: LOCATIONS WHERE AIR QUALITY OBJECTIVES SHOULD APPLY

Averaging Period	Objectives Should Apply at:	Objectives Should Generally 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 and eight-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

Averaging Period	Objectives Should Apply at:	Objectives Should Generally Not Apply at:
		exposure is expected to be short term.
One-hour mean	All locations where the annual mean and: 24 and eight-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 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 expect to spend one hour or longer	Kerbside Sites where the public would not be expected to have regular access.
15-min mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes.	
*** – Such locations should represent parts of the garden where relevant public exposure to pollutants is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied.**		

The annual mean objectives do not apply at commercial and retail receptors. LAQM.TG (16) states that in the absence of Site-specific monitoring, exceedance of the 1-hour mean NO_2 objective is likely to occur where annual mean concentrations are in excess of an annual mean concentration of 60 µg/m^3. Therefore, receptors will be assessed against an annual mean concentration of 60 µg/m^3 for comparison against the 1-hour mean NO_2 objective.

For the PM_{10} short-term (24-hour mean) objective, the number of potential exceedances can be estimated by using the following relationship within LAQM.TG (16) in the absence of Site-specific monitoring:

$$\text{No. 24-hour mean exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + (206/\text{annual mean})$$

3.2.2 National Planning Policy Framework

The latest guidance published in July 2021, the National Planning Policy Framework (NPPF)[9], sets out the Government's planning policies for England and how these are expected to be applied. It replaces Planning Policy Statement 23[10]: Planning and Pollution Control and NPPF 2012 which provided planning guidance for local authorities with regards to air quality.

At the heart of the NPPF is a presumption in favour of sustainable development.

[9] National Planning Policy Framework. July 2021. Ministry of Housing, Communities and Local Government
[10] Planning Policy Statement 23 (PPS 23): Planning and Pollution Control (ODPM).

It provides a framework within which locally prepared plans for housing and other development can be produced. It requires Local Plans to be consistent with the principles and policies set out in the Framework with the objective of contributing to the achievement of sustainable development.

Current planning law requires that application for planning permissions must be determined in accordance with the relevant development plan (i.e. Local Plan or Neighbourhood Plan).

The NPPF should be taken into account in the preparation of development plans and therefore the policies set out within the Framework are a material consideration in planning decisions.

Under paragraph 105, it states that:

> "*The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."*

Under paragraph 174(e), it states that:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans"*

Under paragraph 186, it states that:

> *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual Sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."*

3.2.3 Control of Dust and Particulates Associated with Construction

Section 79 of the Environmental Protection Act (1990)[11] states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

'Any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance'

[11] Available at https://www.legislation.gov.uk/ukpga/1990/43/pdfs/ukpga_19900043_en.pdf

'Any accumulation or deposit which is prejudicial to health or a nuisance'

Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

In the context of the Proposed Development, the main potential for nuisance of this nature will arise during the construction phase - potential sources being the clearance, earthworks, construction and landscaping processes.

There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist - 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred. However, research has been undertaken by a number of parties to determine community responses to such impacts and correlate these to dust deposition rates. However, impacts remain subjective and statutory limits have yet to be derived.

3.2.4 Clean Air Strategy 2019

The UK's Clean Air Strategy 2019[12] shows how we will tackle all sources of air pollution, making our air healthier to breathe, protecting nature and boosting the economy.

This document builds on an extensive consultation process which indicated broad-based support for many of the actions Defra are proposing. There was also a range of constructive feedback and challenge that has enabled Defra to improve and extend its ambition even further in certain key areas. A document summarising the responses to the consultation is published alongside the strategy.

The final strategy sets out these proposals in detail and indicates how devolved administrations intend to make their share of emissions reductions.

This strategy complements three other UK government strategies, the:

- Industrial Strategy.
- Clean Growth Strategy.
- 25 Year Environment Plan.

3.3 London-Specific Policy

3.3.1 Cleaning the Air – London Environment Strategy, 2018

The London Environment Strategy[13] replaced the Mayor of London's Air Quality Strategy[14] and sets out a series of policies and proposals for implementation of the UK AQS and for the achievement of the air quality standards and objectives within Greater London. With regards new developments the following policies are of relevance:

- Policy 4.2.1 'Reduce emissions from London's road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport';
- Policy 4.2.2 'Reduce emissions from non-road transport sources, including by phasing out fossil fuels';

[12] Defra. 2019. Clean Air Strategy 2019.

[13] Available at https://www.london.gov.uk/what-we-do/environment/london-environment-strategy

[14] Available at https://www.london.gov.uk/Sites/default/files/Air_Quality_Strategy_v3.pdf

- Policy 4.3.2 ‘The Mayor will encourage the take up of ultra-low and zero emission technologies to make sure London’s entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines’;
- Policy 4.3.3 ‘Phase out the use of fossil fuels to heat, cool and maintain London’s buildings, homes and urban spaces, and reduce the impact of building emissions on air quality’.
- Policy 4.3.4 ‘Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces.

3.3.2 London Plan 2021

The London Plan 2021 was adopted in March 2021. The Plan is the overall strategic plan for London setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. It specifically addresses how development can help support the implementation of the Mayor's Air Quality Strategy and achieve a reduction in pollutant emissions and public exposure to pollution. ‘Policy SI1 – Improving Air Quality’ of the London Plan states:

- “Development Plans, through relevant strategic, Site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor’s or boroughs’ activities to improve air quality;
- To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:
    - Development proposals should not:
        - lead to further deterioration of existing poor air quality;
        - create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits;
        - create unacceptable risk of high levels of exposure to poor air quality.
    - In order to meet the requirements in Part 1, as a minimum:
        - Development proposals must be at least Air Quality Neutral.
        - Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures.
        - Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development meets the requirements.
        - Development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.
- Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:
    - how proposals have considered ways to maximise benefits to local air quality, and
    - what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

- In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.
- Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-Site. Where it can be demonstrated that emissions cannot be further reduced by on-Site measures, off-Site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development."

'Policy SI3 – Energy Infrastructure' states that major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:

- "Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:
    - The heat source for the communal heating system should be selected in accordance with the following heating hierarchy:
        a) Connect to local existing or planned heat networks;
        b) Use zero-emission or local secondary heat sources (in conjunction with heat pump, if required);
        c) Use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network);
        d) Use ultra-low NO_x gas boilers.
    - CHP and ultra-low NO_x gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality.
    - Where a heat network is planned but not yet in existence the development should be designed to allow for the cost-effective connection at a later date."

3.4 Relevant National and London Guidance

A summary of the publications referred to in the undertaking of this assessment is provided below.

3.4.1 Land-Use Planning & Development Control: planning for Air Quality

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance that offers comprehensive advice on: when an air quality Assessment may be required; what should be included in an Assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.[15]

[15] Available at http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

3.4.2 Greater London Authority: Sustainable Design and Construction Supplementary Planning Guidance

Section 4.3 of this Supplementary Planning Guidance (SPG)[16] provides guidance on when a developer will be required to undertake an air quality assessment, looks at how design and transport measures can be used to minimise emissions to air, and sets out emissions standards for combustion plant.

The SPG also contains guidance on assessing the air quality neutrality of a Proposed Development in order to comply with the London Plan and the Mayor's Air Quality Strategy. Air Quality neutral benchmarks for both transport and buildings NO_x and PM_{10} emissions are provided within the SPG.

Developments that do not exceed these benchmarks (considered separately) will be considered to be 'air quality neutral', whilst developments that exceed the benchmarks after appropriate on-Site mitigation measures have been incorporated will be required to off-set any excess in emissions off Site. This can be achieved by providing NO_x and PM abatement measures in the vicinity of the development, such as: green planting/walls and screens, with special consideration given to planting that absorbs or supresses pollutants; upgrade or abatement work to combustion plant; retro-fitting abatement technology for vehicles and flues; and exposure reduction. These measures can be secured by condition or Section 106 contribution. Air quality monitoring is not eligible for funding as it is not considered to contribute to actual air quality improvements.

3.4.3 Guidance on the Assessment of Dust from Demolition and Construction

This document published by the IAQM was produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying Sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.[17]

3.4.4 Mayor of London's Supplementary Planning Guidance for the Control of Dust and Emissions during Construction and Demolition

This Supplementary Planning Guidance (CDECD SPG)[18] builds on the voluntary guidance published in 2006 by the London Councils to establish best practice in mitigating impacts on air quality during construction and demolition work. The SPG incorporates more detailed guidance and best practice and seeks to address emissions from Non-Road Mobile Machinery (NRMM) through the use of a Low Emission Zone, which was introduced in September 2015.

The SPG provides a methodology for assessing the potential impact of construction and demolition activities on air quality following the same procedure as set out in the IAQM guidance. It then identifies the relevant controls and mitigation measures that should be put in place to minimise any adverse impacts, which need to be set out, in draft, in an air quality assessment report submitted with the planning application, and then formalised post submission as an Air Quality and Dust Management Plan. Details of Site air quality monitoring protocols are also provided with varying requirements depending on the size of the Site and the potential risk of adverse impacts.

[16] Available at https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/planning-guidance-and-practice-notes/sustainable-design-and

[17] Available at http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf

[18] Available at https://www.london.gov.uk/file/18750/download?token=zV3ZKTpP

3.5 Camden-specific Policy & Guidance

3.5.1 Camden Local Plan (2017)

The Camden Local Plan (2017)[19] sets out LBC's vision for the borough, as well as relevant policies for purposes of planning. Of particular relevance is Policy CC4 on Air Quality, which sets out the council's expectations for consideration of air quality during the planning processes. Reference is also made in this section to policy T2, which requires all new development in the borough to be "car-free". More detail on air quality requirements for planning is provided in a more recent publication, which is discussed overleaf.

3.5.1 Camden Planning Guidance: Air Quality (2021)

The Camden Planning Guidance on Air Quality,[20] published in January 2021, provides a more complete picture of local planning requirements with respect to air quality. In particular, Table 1 of the guidance provides screening criteria for scoping of air quality assessments according to the scale of the development, the baseline air quality at the Site, the sensitivity of future receptors to air quality, and the air quality impacts from the development. On the basis of these criteria, either a basic or detailed AQA is required, with the latter involving full detailed modelling of exposure at the Site and impacts. Furthermore, an Air Quality Neutral Assessment and Construction and Demolition Impacts assessment may be required, depending on the scale of the development.

[19] Available at: https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6

[20] Available at: https://www.camden.gov.uk/documents/20142/4823269/Air+Quality+CPG+Jan+2021.pdf/4d9138c0-6ed0-c1be-ce68-a9ebf61e8477?t=1611580574285

4. Scoping

4.1 Scope

The necessary scope for the Air Quality Assessment has been determined with reference to the Camden Planning Guidance: Air Quality 2021 (See Section 3.5). Following the relevant screening process has led to adoption of the scope set out below:

- A review of air quality of the Site using existing air quality monitoring and/or modelling data.
- Assessment of the potential impact of air quality on users of the Proposed Development.
- Assessment of potential impact on local air quality during construction and recommended mitigation measures, if required.
- Assessment of potential impact on air quality during operation of the Proposed Development and recommended mitigation measures, if required.

Given the 'Minor' scale of the Proposed Development, and the absence of new sensitive receptors introduced, an air quality neutral assessment has been scoped out of the assessment. The planning guidance is ambiguous as to the requirement to assess construction phase impacts in this case, so this has been carried out as a precaution.

5. Baseline Air Quality

5.1 General

This section contains a review of the baseline air quality at the Site and within the wider local area. The most recent publicly available data has been sourced from the London Atmospheric Emissions Inventory (LAEI), and the relevant local authorities. Whilst the Site is fully located within the administrative area of the London Borough of Camden (LBC), it is just over 300m away from the boundary with Westminster City Council (WCC). As such, air pollution data has been reviewed for both local authorities.

The entirety of the LBC area was declared as an Air Quality Management Area in 2002 for exceedances of the NO_2 annual mean limit, and of the PM_{10} 24-hour mean limit. As such, the Site is located within an AQMA. The entirety of WCC was also declared as an AQMA in 1999, for both of the above exceedances, as well as for exceedances of the NO_2 1-hour mean limit value.

5.2 Air Quality Focus Areas

The Greater London Authority (GLA) have designated 183 Air Quality Focus Areas (AQFAs), utilising the 2016 London Atmospheric Emissions Inventory (LAEI).

AQFAs are locations of high human exposure where modelled NO_2 concentrations exceed the EU annual mean limit. The areas highlight specific locations where air quality improvements are key and a coordinated approach is necessary, involving not only the relevant London Borough Council, but also regional bodies such as GLA, Transport for London (TfL) and Highways England.

The Site itself is not located within an AQFA. However, the western boundary of AQFA no. 33, which covers Holborn High Street and Southampton Row Junction, is located approximately 50m east of the Site. AQFA no. 176, which extends from Marble Arch to Bloomsbury along Oxford Street, is located just over 200m to the west.

5.3 LAEI Modelled Concentrations

In addition to the designation of AQFAs, the LAEI provides ground-level modelled concentrations of NO_x, NO_2, PM_{10} and $PM_{2.5}$ across Greater London on 20m x 20m grid. These concentrations are derived from known emissions sources and road traffic emissions, combined with an atmospheric dispersion model. The most recent estimates are provided for the base year of 2019. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have all been reviewed for the 500m surrounding the Site. The maximum, minimum and mean values, as well as the values for the closest grid points for both sections of the overall Site have all been included in TABLE 5.1.

TABLE 5.1: SUMMARY OF LAEI 2019 GRIDDED MODELLED GROUND-LEVEL CONCENTRATIONS FOR NO_2, PM_{10} AND $PM_{2.5}$ WITHIN A 500M RADIUS OF THE SITE

	Annual Mean Concentration ($\mu g/m^3$)		
	NO_2	**PM_{10}**	**$PM_{2.5}$**
Maximum	**128.3**	**69.1**	27.3
Average	**41.0**	23.1	14.0

	Annual Mean Concentration ($\mu g/m^3$)		
	NO_2	**PM_{10}**	**$PM_{2.5}$**
Minimum	37.1	21.1	13.1
At 46-47 Bloomsbury Square	38.3	22.1	13.7
At 20-22 Southampton Place	38.0	21.9	13.6
Annual mean limit value	40	40	25
Note: Concentrations in bold denote exceedances of the relevant annual mean national air quality objective limit value.			

Inspection of the values displayed in the above table demonstrate that air quality is poor in the vicinity of the Site, with the average NO_2 concentration exceeding annual mean limit values, and maximum values for all three pollutants exceeding limits by considerable margins. However, the air quality at the Site itself is within legal limits, and the modelled concentrations are close to the lowest found in the surrounding area.

5.4 Local Authority Monitoring

To gain a more accurate understanding of the baseline air quality at the Site, the most recently published local authority monitoring data has been obtained from the latest Annual Status Reports (ASRs) of LBC (published 2021)[21] and WCC (published 2021).[22] Data from automatic and non-automatic monitoring Sites has been reviewed for both local authorities. The chosen baseline year for assessment is 2019, given the absence of complete air quality data for 2021, and the atypical nature of air quality during 2020 as a result of COVID-19 lockdowns and resultant reductions in traffic.

In 2019, LBC maintained a network of 33 NO_2 diffusion tubes and 4 automatic monitoring Sites, three of which provided continuous measurements of NO_2, PM_{10}, and $PM_{2.5}$, with the other providing data for PM_{10} only. WCC operated automatic monitoring at 10 locations in 2019: 6 Sites monitoring only NO_2, 3 Sites monitoring both NO_2 and PM_{10}, and one Site monitoring all of NO_2, PM_{10}, $PM_{2.5}$ and SO_2 (Marylebone Road, national monitoring network). Whilst WCC's ASR gives details of 27 separate diffusion tube monitoring locations, none of these were operational in 2020 or 2019. TABLE 5.2 shows the monitoring results up to 2019 for all monitoring locations within 1km of the Site.

[21] Available for download at: https://www.camden.gov.uk/air-quality#mczc

[22] Available for download at: https://www.westminster.gov.uk/planning-building-and-environmental-regulations/environment-conservation-and-pollution/how-were-improving-air-quality/pollution-alerts-statistics-and-reports

TABLE 5.2: LOCAL AUTHORITY MONITORING (LBC AND WCC) NO_2 CONCENTRATIONS FOR 2016 – 2019 FOR ALL LOCATIONS WITHIN 1KM OF THE SITE.

Site ID	Local Authority	Site Name	Distance to Site (km)	NO_2 Concentration (µg/m^3)			
				2016	2017	2018	2019
CA21	LBC	Bloomsbury Street	0.41	**72.2**	**71.2**	**59.4**	**48.5**
BL0	LBC	London Bloomsbury (Russell Square Gardens)	0.48	**42.0**	38.0	36.0	32.0
WCC5	WCC	Covent Garden	0.68	-	37.0	39.0	39.0
WCC4	WCC	Strand	0.78	**101.0**	**92.0**	**88.0**	**76.0**
CA11	LBC	Tottenham Court Road	0.82	**83.6**	**74.0**	**65.8**	**61.2**
CA6	LBC	St. George's Gardens	0.83	31.3	34.8	26.7	24.7
CA10	LBC	Tavistock Gardens	0.88	39.7	46.2	35.4	33.1
CA28	LBC	St George's Gardens East	0.92	-	-	-	27.7
WCC7	WCC	Oxford Street East (94 Oxford Street)	0.92	-	-	**76.0**	**51.0**

Note: Concentrations in bold denote exceedances of the relevant annual mean national air quality objective limit value.

The above table presents a mixed picture in terms of air quality. Whilst the closest monitoring location (CA21) recorded a substantial exceedance of the NO_2 annual mean limit value in 2019, this Site is on a busy main road (the A400) and would therefore be expected to have worse air quality than the Site. The second closest monitoring location (BL0) is likely to be more representative of air quality at the Site, as it is situated in the same general area, but is not directly by the roadside. Concentrations of PM_{10} and $PM_{2.5}$ recorded at BL0 are considerably below legal limits. As such, it is considered unlikely that air pollutant concentrations at the Site would be above legal limits. Furthermore, given national and London-specific trends towards improving air quality in the years since 2019, it is considered likely that the data reviewed here presents a 'worst-case' scenario with respect to air quality at the Site.

5.5 Summary

To summarise, whilst the Site is within an AQMA and in close proximity to an AQFA, it is considered likely that air quality at the Site would be acceptable for the intended use. The LAEI 2019 modelled concentrations for all species are below the residential-use legal limits at the Site, and nearby local authority monitoring gives no reason to suspect exceedances. Furthermore, both the LAEI and local authority data likely present a 'worst-case' picture of air quality at the Site, given the national and local trends towards improved air quality since 2019.

6. Construction Phase Impacts

6.1 Dust and PM_{10} from On-Site Activities

In general, construction activities that have the potential to generate and/or re-suspend dust and PM_{10} include:

- Site clearance and preparation.
- Preparation of temporary access/egress to the Site and haulage routes.
- Earthworks.
- Materials handling, storage, stockpiling, spillage and disposal.
- Movement of vehicles and construction traffic within the Site (including excavators and dumper trucks).
- Use of crushing and screening equipment/plant.
- Exhaust emissions from Site plant, especially when used at the extremes of their capacity and during mechanical breakdown.
- Construction of buildings, roads and areas of hard standing alongside fabrication processes.
- Internal and external finishing and refurbishment.
- Site landscaping after completion.

The magnitude and impact of such activities in this case have been reviewed in line with the relevant IAQM Guidance and London Mayor's Supplementary Planning Guidance (see Section 3.4). The activities have been broken down into four categories accordingly: Demolition, Earthworks, Construction, and Trackout. The full IAQM Construction Assessment Methodology guidance can be found in Appendix A.

6.2 Assessment of Potential Dust Emission Magnitude

6.2.1 Demolition

No substantial demolition activities will be required for the Proposed Development. As such, the potential dust emission magnitude from demolition is considered to be '**Small**'.

6.2.2 Earthworks

No substantial earthworks will be required for the Proposed Development. As such, the potential dust emission magnitude from earthworks is considered to be '**Low**'.

6.2.3 Construction

The total building volume involved in carrying out the remedial and refurbishment works will be far below 25,000 m^3, meaning the potential dust emission magnitude from construction will be '**Low**'.

6.2.4 Trackout

Given the scale of the three other activities listed above, it is considered highly unlikely that over 10 HDV trips would be required on any given day during the construction

phase. Given this, and the paved nature of the surrounding roads, the potential dust emission magnitude from trackout will be '**Low**'.

6.2.5 Summary of Dust Emission Magnitudes

TABLE 6.1 below provides a summary of the potential dust emission magnitudes from each activity.

TABLE 6.1: SUMMARY OF DUST EMISSION MAGNITUDE FOR EACH ACTIVITY

Source	Dust Emission Magnitude
Demolition	Low
Earthworks	Low
Construction	Low
Trackout	Low

6.3 Sensitivity of the Surrounding Area

The baseline PM_{10} concentrations at the Site (as determined from LAEI 2019 data and local authority monitoring) are well below the annual mean limit. Furthermore, the Proposed Development will be small in scale and construction activities short in duration. Nearby properties are a mixture of residential and commercial, with no sensitive receptors within 20m of the property as far as can be established. Considering all of these factors and adopting a conservative, 'worst-case scenario' approach, the sensitivity of the surrounding area in relation to dust soiling and the corresponding sensitivity in terms of human health impacts are presented in TABLE 6.2 below for each activity.

No ecological sites are identified in the vicinity of the Site. Therefore, assessment of this type of receptor is not considered further.

TABLE 6.2: SUMMARY OF SENSITIVITY OF SURROUNDING AREA

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	Low	Low	Medium	Low
Human Health	Low	Low	Low	Low

6.4 Defining the Risk of Impacts

The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. TABLE 6.3 overleaf provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required, as presented in Appendix C.

TABLE 6.3: SUMMARY OF RISK EFFECTS TO DEFINE SITE SPECIFIC MITIGATION

Potential Impact	Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	Negligible	Negligible	Low	Negligible
Human Health	Negligible	Negligible	Negligible	Negligible

Overall, there is a '**Low'** risk of dust soiling, and a '**Negligible'** risk of human health impacts from the demolition, earthworks, construction, and trackout activities during the Proposed Development. Mitigation measures have been recommended in line with this, as detailed in Section 8.

6.5 Construction Vehicles & Plant

The greatest impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the Site access. It is considered highly likely that the construction traffic will be of low volume in comparison to the existing traffic flows on this road.

Final details of the exact plant and equipment likely to be used on the Site will be determined by the appointed contractor. The numbers of plant and their location within the Site are likely to be variable over the construction period.

Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are therefore considered to be of 'Negligible' significance according to the assessment significance criteria.

7. Operational Phase Impacts

7.1 Impact of Local Area on Future Occupants

The review of the baseline at the Site demonstrates that local concentrations of relevant pollutants are likely to be compliant with all annual mean national air quality objectives for residential and sensitive receptors (See Section 5).

In this case, only the short-term air quality objectives apply, given that the Proposed Development do not result in the introduction of any such sensitive receptors (See TABLE 3.2).

The LAQM TG (16) guidance gives methods for estimating the number of exceedances of the short-term limits for PM_{10} and NO_2, given knowledge of the annual mean (See Section 3.2.1).

For NO_2, it is considered unlikely that any short-term exceedances will occur if annual mean concentrations are below 60 µg/m^3. Both the LAEI modelled NO_2 concentrations and nearby local authority monitoring data suggest that such concentrations are highly unlikely at the Site. As such, it is considered very unlikely that any exceedances of the NO_2 1-hour mean would occur at the Site.

For PM_{10}, the number of exceedances of the 24-hour mean can be approximated by the following formula:

No. 24-hour mean exceedances = -18.5 + 0.00145 × annual mean^3 + (206/annual mean)

This formula has been applied to several PM_{10} annual mean values considered relevant in this case. The results of this analysis are presented in TABLE 7.1 below.

TABLE 7.1: ESTIMATED NUMBER OF PM_{10} 24-HOUR MEAN LIMIT VALUE EXCEEDANCES FOR THREE MOST REPRESENTATIVE BASELINE ANNUAL MEAN CONCENTRATIONS

Site / Location	2019 PM_{10} annual mean concentration (µg/m^3)	Calculated number of exceedances (rounded)
LAEI at 46-47 Bloomsbury Square	22.1	6
LAEI at 20-22 Southampton Place	21.9	6
LAEI average, wider area	23.1	8
LBC BL0 monitoring station	18.0	1

Given that 35 exceedances are allowed in a given calendar year, it is considered highly unlikely that this limit is breached at the Site.

As such, the impact of local air pollution on future occupants of the Site is considered to be minimal.

7.2 Impact of Proposed Development on Local Air Quality

The relevant air quality planning guidance from EPUK/IAQM and LBC have been reviewed to assess the impact of the Proposed Development on local air quality during the operational phase.

The EPUK Stage 1 screening criteria applied to the Proposed Development are presented in TABLE 7.2 below. The full Screening Criteria can be found in Appendix B.

TABLE 7.2: EPUK/IAQM STAGE 1 SCREENING CRITERIA

Screening Criteria	Development Proposal
A: If any of the following apply	
> 10 residential units or a Site area of > 0.5ha	N/A
> 1,000 m^2 of floor space for all other uses or a Site area > 1 ha	N/A
B. Coupled with any of the following	
Development > 10 parking spaces	N/A
Central energy facility or centralised combustion process	No new central provision

In this case, none of the Stage 1 criteria are breached. As such, the Proposed Development would be considered to have '**Insignificant Effects'** on local air quality, as per the EPUK/IAQM guidance.

8. Mitigation

8.1 Construction Phase

Particle generation from construction activities can be substantially reduced through carefully selected mitigation techniques and effective management. The most effective technique is to control at source, as once particles are airborne, it is difficult to prevent them from dispersing into the surrounding area. However, once airborne, water sprays are probably the most effective method for suppression. Pre-project planning, implementation and on-Site management issues are an essential requirement for effective dust control. This includes, for example environmental risk assessments, method statements, training and satisfying planning requirements. Before the start of a project, it is also important to identify which construction activities are likely to generate dust and to draw up action plans to minimise emissions to the atmosphere. Dust emissions from construction Sites will mainly be the sum of a large number of small activities. Therefore, attention to detail is a critical feature of effective management of the total Site emissions.

In this case, the likely risk of impacts from the construction phase has been classified as ‘Low’ in terms of dust soiling, and ‘Negligible’ in terms of human health. However, as a best-practice approach, it is still recommended that efforts are taken to mitigate any dust emissions which may occur during the construction phase. A full list of mitigation measures can be found in Appendix C – in this case, the left-most column should be followed, corresponding to ‘Low’ risk.

8.2 Operational Phase

8.2.1 Impact of Local Area on Future Occupants

The assessment of baseline air quality has led to the conclusion that no relevant health-based national air quality objectives are likely to be exceeded at the Site. As such, the future occupants of the Site would not be exposed to unacceptable air quality and the Site is deemed suitable for its proposed future use in this respect. No additional mitigation is required, with the building to be naturally ventilated.

8.2.2 Impacts on Surrounding Air Quality

Regarding the impact of the proposals on the surrounding area, the screening assessment based on EPUK/IAQM criteria has led to the conclusion that the impacts on local air quality from the Proposed Development will be ‘**Insignificant’**. As such, no additional mitigation is required.

9. Conclusions

Sweco UK Ltd ('Sweco') was commissioned by Workman LLP on behalf of Hogarth Properties S.A.R.L ('Client') to prepare a qualitative Air Quality Assessment (AQA) for proposed remedial work and Cat A refurbishment of offices ('Proposed Development') at existing buildings at 20-21, 22 Southampton Place and 46-47 Bloomsbury Square, Holborn, London ('Site').

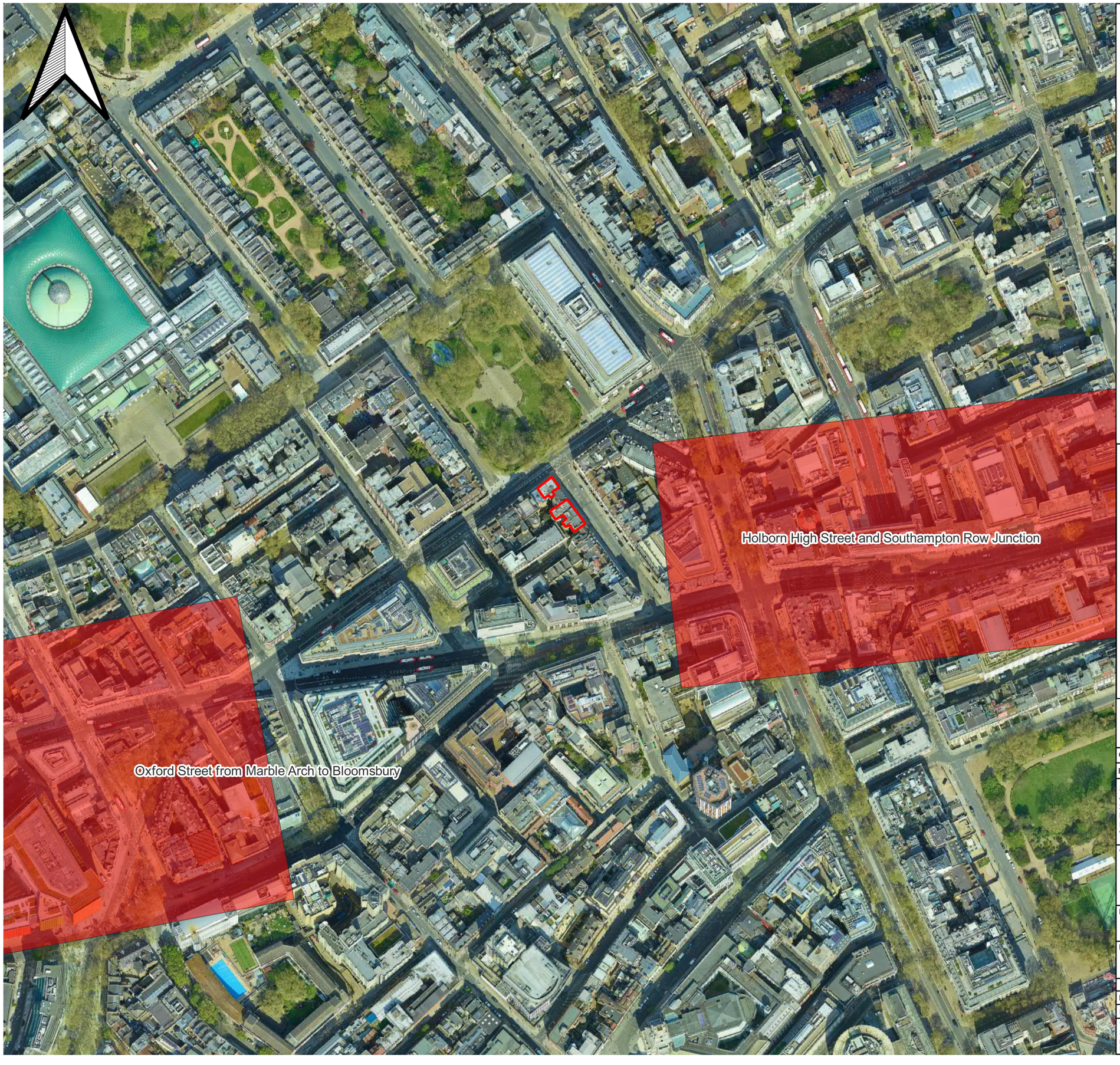
With regard to impacts during construction, a qualitative assessment on the construction phase activities has been carried out following the relevant IAQM guidance. This identified that there is a 'Low Risk' of dust soiling impacts and 'Negligible Risk' of increases in particulate matter concentrations that could affect human health due to construction activities. Through good Site practice and the implementation of suitable mitigation measures, the effect of dust and particulate matter releases would be significantly reduced. The residual effects of the construction phase on air quality are considered to be '**Negligible'**.

Regarding the suitability of air quality at the Site for its intended use, monitored pollutant concentrations in the vicinity of the Site are below the relevant health-based objectives. As such, the future occupants would not be exposed to unacceptable air quality and the Site is deemed suitable for its proposed future use in this respect.

Regarding the impact of the proposals on the surrounding area, a screening assessment of the operational phase was undertaken in line with EPUK/IAQM guidance. The conclusion of this assessment is that the impact of the Proposed Development on local air quality would be '**Insignificant'**.

The air quality effect of the Proposed Development is considered to be '**Not Significant'**. The Proposed Development does not, in air quality terms, conflict with national or local policies. On implementation of the recommended mitigation measures, there are no constraints to the Proposed Development in the context of air quality.

Figures



Legend

- SITE BOUNDARY
- LAEI 2016 AQFAs

0 50 100 m

C01	16.05.2022	For Information	FW	KN	KN
Rev.	Rev. Date	Drawing Suitability	Drawn	Checked	Appr'd

Sweco UK,
4th Floor Eldon House,
2 Eldon Street,
London,
EC2M 7LS
Web: www.sweco.co.uk

SWECO

Client

HOGARTH PROPERTIES S.A.R.L

Project

HOLBORN LINKS - PROJECT 5

Drawing Title

SITE LOCATION AND AQFAs

Status Desc.	DRAFT	Status	S2
Project No.	65206338	Scale	1:1
Drawing No.	65206338-SWE-ZZ-XX-DR-J-FIGURE-1	Sheet Size	A3

Legend

SITE BOUNDARY

LOCAL AUTHORITY NO2 CONCENTRATIONS, 2019 (ug/m3)

- 0 - 30
- 30 - 35
- 35 - 39
- 39 - 50
- 50 - 76

0 0.25 0.5 km

Rev.	Rev. Date	Drawing Suitability	Drawn	Checked	Appr'd
C01	16.05.2021	For Information	FW	KN	KN

Sweco UK,
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HOGARTH PROPERTIES S.A.R.L

Project

HOLBORN LINKS - PROJECT 5

Drawing Title

LOCAL AUTHORITY NO2 MONITORING

Status Desc.	DRAFT	Status	S2
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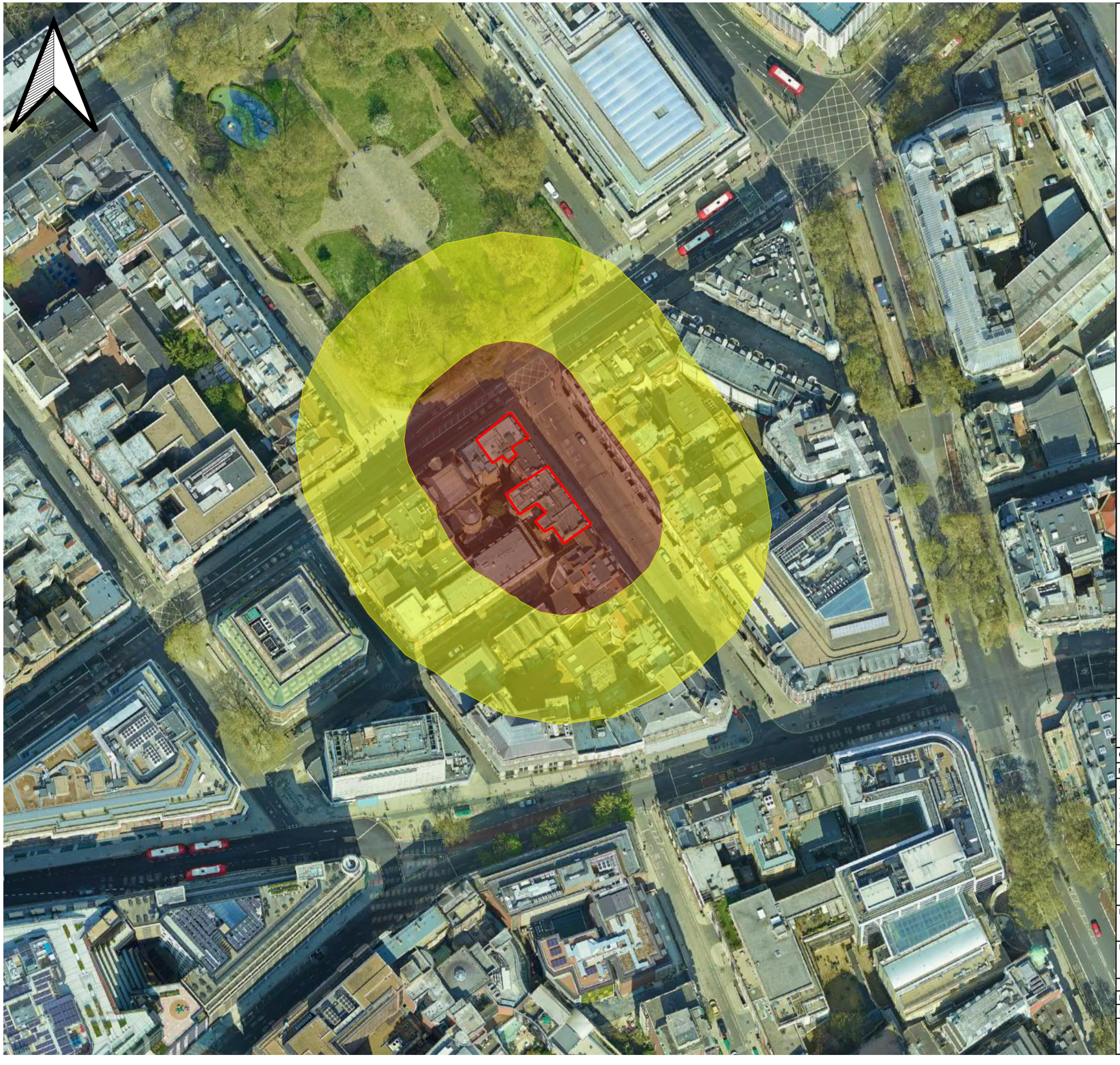
Drawing No.	65206338-SWE-ZZ-XX-DR-J-FIGURE-2	Sheet Size	A3



Legend

- SITE BOUNDARY

CONSTRUCTION DUST BUFFERS

- 20M
- 50M

0 20 40 60 80 m

Rev.	Rev. Date	Drawing Suitability	Drawn	Checked	Appr'd
C01	16.05.2022	For Information	FW	KN	KN

Sweco UK,
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Client

HOGARTH PROPERTIES S.A.R.L

Project

HOLBORN LINKS - PROJECT 5

Drawing Title

CONSTRUCTION DUST BUFFERS

Status Desc.	DRAFT	Status	S2
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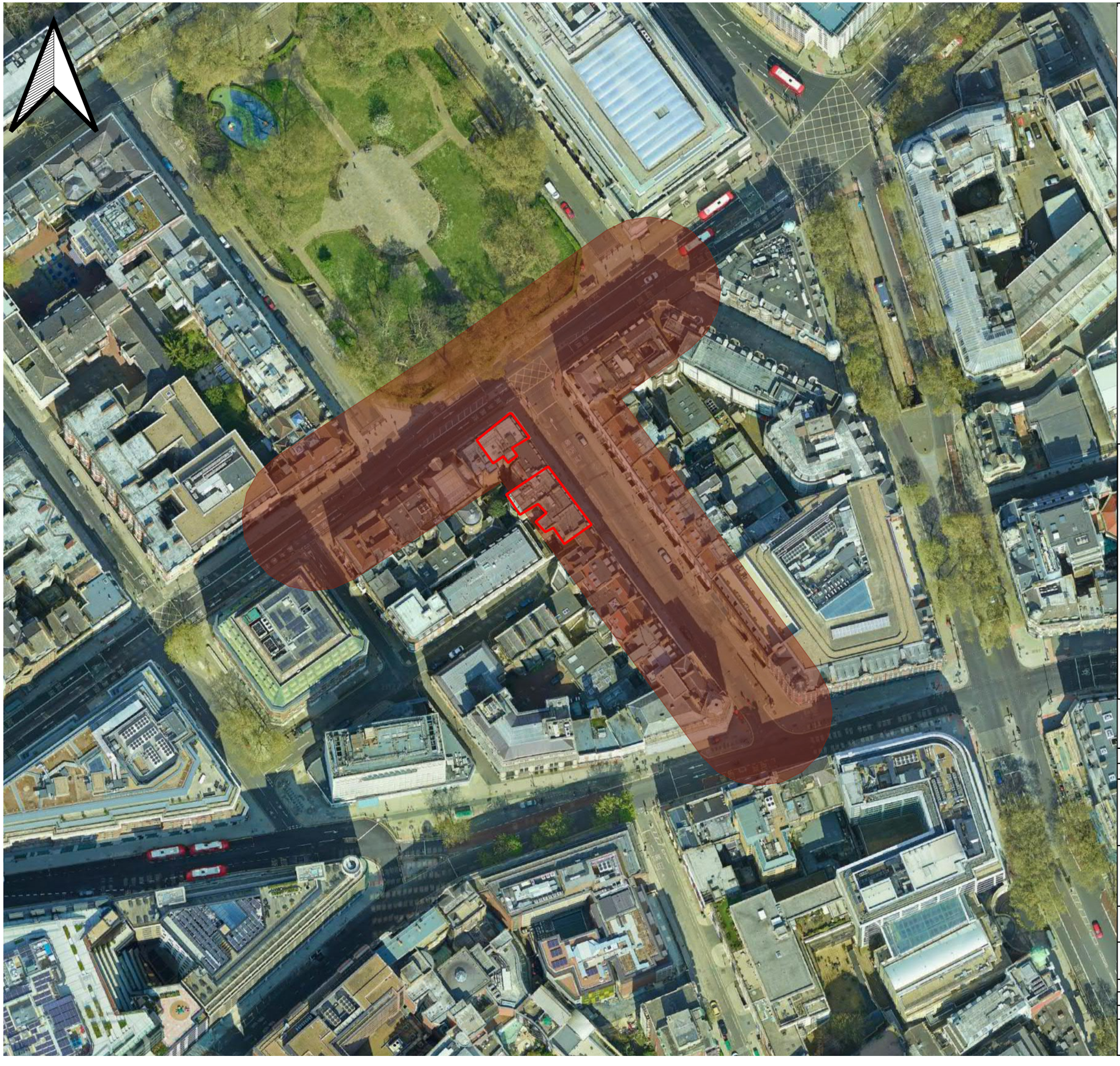
Drawing No.	65206338-SWE-ZZ-XX-DR-J-FIGURE-3	Sheet Size	A3



Legend

- SITE BOUNDARY
- TRACKOUT DUST BUFFERS (20M)

0 20 40 60 80 m

Rev.	Rev. Date	Drawing Suitability	Drawn	Checked	Appr'd
C01	16.05.2022	For Information	FW	KN	KN

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SWECO

Client

HOGARTH PROPERTIES S.A.R.L

Project

HOLBORN LINKS - PROJECT 5

Drawing Title

TRACKOUT DUST BUFFERS

Status Desc.	DRAFT	Status	S2
Project No.	65206338	Scale	1:1
Drawing No.	65206338-SWE-ZZ-XX-DR-J-FIGURE-4	Sheet Size	A3

Appendix A – IAQM Construction Dust Assessment Methodology

It is inevitable that with any development, demolition and construction activities would cause some disturbance to those nearby. Dust arising from most construction activities tends to be of a coarse nature, which through dispersion by the wind, can lead to soiling of property including windows, cars, external paintwork and laundry.

The ability of dust particles to remain suspended in the air depends on its shape, size and density. Coarse particles (>30µm) tend to be deposited within 100m of source. Finer particles, between 10-30µm, are generally deposited within 200 to 500m of source, while very fine particles (<10 µm), which remain suspended for longer, can travel up to 1km from source. The greatest proportion of construction dust is made up of coarse particles, thus the majority of dust emissions are deposited within 100m of source.

However, as well as giving rise to annoyance due to soiling of surfaces from dust emissions, there is evidence of major construction activities causing increases in long term PM_{10} concentrations and in the number of days exceeding the short term PM_{10} objective of 50µg/m^3. The potential for impacts to occur during the construction of a proposed development must therefore be considered, to ensure appropriate mitigation measures are applied to reduce potential impacts at adjacent receptors. However, it should be noted that disruption due to demolition and construction is a localised phenomenon and is temporary in nature.

During the construction of the proposed development, Lorries would require access to the site to deliver and remove materials; earthmoving plant and other mobile machinery will work on site and generators and cranes will also be in operation. These machines produce exhaust emissions; of particular concern are emissions of NO_2 and PM_{10}.

The assessment of construction impacts has followed the methodology set out within guidance produced by Institute of Air Quality Management (IAQM) on assessing impacts from construction activities and is set out below.

Prediction Method and Approach

In order to assess the potential impacts, the activities on construction sites are divided into four categories. These are:

- Demolition (removal of existing structures).

- Earthworks (soil-stripping, ground-levelling, excavation and landscaping).
- Construction (activities involved in the provision of a new structure).
- Trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

For each activity, the risk of dust annoyance, health and ecological impact is determined using three risk categories: low, medium and high risk. The risk category may be different for each of the four activities. The risk magnitude identified for each of the construction activities is then compared to the number of sensitive receptors in the near vicinity of the site in order to determine the risks posed by the construction activities to these receptors.

Step 1: Screen the Need for an Assessment

The first step is to screen the requirement for a more detailed assessment. An assessment is 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); and/or
- An 'ecological receptor' within:
  - 50m of the boundary of the site; or
  - 50m of the route(s) used by the construction vehicles on the public highway, up to 500m from the site entrance(s)

Step 2A: Define the Potential Dust Emission Magnitude

This is based on the scale of the anticipated works and the proximity of nearby receptors. The risk is classified as small, medium or large for each of the four categories.

Demolition: The potential dust emission classes for demolition are:

- Large: Total building volume >50,000m^3, potentially dusty construction material (eg Concrete), on site crushing and screening, demolition activities >20m above ground level.
- Medium: total building volume 20,000m^3 - 50,000m^3, potentially dusty construction material, demolition activities 10-20m above ground level.
- Small: total building volume <20,000m^3, construction material with low potential for dust release (eg metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Earthworks: This involves excavating material, haulage, tipping and stockpiling. The potential dust emission classes for earthworks are:

- Large: Total site area >10,000m^2, potentially dusty soil type (eg clay, which would be prone to suspension when dry due to small particle size), >ten heavy earth moving vehicles active at any one time, formation of bunds >8m in height, total material moved >100,000 tonnes.

- Medium: Total site area 2,500m^2 - 10,000m^2, moderately dusty soil (eg silt), five - ten heavy earth moving vehicles active at any one time, formation of bunds 4m - 8m in height, total material moved 20,000 tonnes- 100,000 tonnes.
- Small: Total site area <2,500m^2, soil type with large grain size (eg sand), <five heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <20,000 tonnes, earthworks during wetter months.

Construction: The important issues when determining the potential dust emission magnitude include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The categories are:

- Large: Total building volume >100,000m^3, on site concrete batching, sandblasting.
- Medium: Total building volume 25,000m^3 - 100,000m^3, potentially dusty construction material (eg concrete), on site concrete batching.
- Small: Total building volume <25,000m^3, construction material with low potential for dust release (eg metal cladding or timber).

Trackout: The risk of impacts occurring during trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the Site as a result of the trackout. The categories are:

- Large: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (eg high clay content), unpaved road length > 100m.
- Medium: 10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (eg high clay content, unpaved road length 50-100m.
- Small: <10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length >50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health (PM_{10}) and ecological receptors. The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area.
- The proximity and number of receptors.
- In the case of PM_{10}, the local background concentration.
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table A1.1 is used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

TABLE A1.1 EXAMPLES OF FACTORS DEFINING SENSITIVITY OF AN AREA

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	Users can reasonably expect enjoyment of a high level of amenity. The appearance, aesthetics or value of their property would be diminished by soiling. The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. eg dwellings, museums and other important collections, medium and long-term car parks and car showrooms.	10 – 100 dwellings within 20m of site. Local PM_{10} concentrations close to the objective (eg annual mean 36 - 40µg/m^3), eg residential properties, hospitals, schools and residential care homes.	Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red List for Great Britain. eg A Special Area of Conservation (SAC).
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. The appearance, aesthetics or value of their property could be diminished by soiling. The 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.	Less than 10 receptors within 20m. Local PM_{10} concentrations below the objective (eg annual mean 30-36µg/m^3). eg office and shop workers but would generally not include workers occupationally exposed to PM_{10} as protection is covered by the Health and Safety at Work legislation	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition eg A Site of Special Scientific Interest (SSSI)

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
	eg parks and places of work.		with dust sensitive features.
Low	The enjoyment of amenity would not reasonably be expected. Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. eg playing fields, farmland unless commercially sensitive horticultural, footpaths, short lived car parks and roads.	Locations where human exposure is transient. No receptors within 20m. Local PM_{10} concentrations well below the objectives (less than 75%). eg public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. eg Local Nature Reserve with dust sensitive features.

Based on the sensitivities assigned to the different receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification can be defined for each. Tables A1.2 to A1.4 indicate the criteria used to determine the sensitivity of the area to dust soiling, human health and ecological impacts.

TABLE A1.2 SENSITIVITY OF THE AREA TO DUST SOILING ON PEOPLE AND PROPERTY

Pollutant	Concentrations	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 A1.3 SENSITIVITY OF THE AREA TO HUMAN HEALTH IMPACTS

Receptor Sensitivity	Annual Mean PM_{10} Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32µg/m³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28µg/m³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24µg/m³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low		≥1	Low	Low	Low	Low	Low

TABLE A1.4 SENSITIVITY OF THE AREA TO ECOLOGICAL IMPACTS

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Step 2C: Define the Risk of Impacts

The final step is to combine the dust emission magnitude determined in step 2A with the sensitivity of the area determined in step 2B to determine the risk of impacts with no mitigation applied. Tables A1.5 to A1.7 indicate the method used to assign the level of risk for each construction activity.

The identified risk of impact is then used to identify appropriate mitigation measures for inclusion with a Dust Management Plan (DMP) which is usually incorporated within the Site's Construction Environmental Management Plan (CEMP).

TABLE A1.5 RISK OF DUST IMPACTS FROM DEMOLITION

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

TABLE A1.6 RISK OF DUST IMPACTS FROM EARTHWORKS/CONSTRUCTION

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

TABLE A1.7 RISK OF DUST IMPACTS FROM TRACKOUT

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

Appendix B – EPUK/IAQM Full Screening Criteria

TABLE B1.1 STAGE 1 CRITERIA TO PROCEED TO STAGE 2

Criteria to Proceed to Stage 2
A. **If any of the following apply:** • **10 or more residential units of a site area of more than 0.5ha;** • **More than 1,000m^2 of floor space for all other uses or a site area greater than 1ha.**
B. **Coupled with any of the following:** • **The development has more than 10 parking spaces;** • **The development will have a centralised energy facility or other centralised combustion process.**

TABLE B1.2 INDICATIVE CRITERIA AT STAGE 2 TO DETERMINE IF AN AIR QUALITY ASSESSMENT IS REQUIRED

The Development will	**Indicative Criteria to Proceed to an Air Quality Assessment**
Cause a significant change in Light Duty Vehicle (LDV) traffic slows on local roads with relevant receptors.	A change of LDV flows of: • More than 100 AADT within or adjacent to an AQMA; • More than 500 AADT elsewhere.
Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors.	A change of HDV flows of: • More than 25 AADT within or adjacent to an AQMA; • More than 100 AADT elsewhere.
Realign roads, ie changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.

The Development will	Indicative Criteria to Proceed to an Air Quality Assessment
Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic-lights, or roundabouts.
Introduce or change a bus station.	Where bus flows will change by: • More than 25 AADT within or adjacent to an AQMA; • More than 100 AADT elsewhere.
Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
Have one or more substantial combustion processes.	Where the combustion unit is: • Any centralised plant using biofuel. • Any combustion plant with single or combined thermal input >300kWh; • A standby emergency generator associated with a centralised energy centre (if likely to be tested/used >18 hours a year).
Have a combustion process of any size.	Where the pollutants are exhausted from a vent or stack in a location and at a height that may give rise to impacts at receptors through insufficient dispersion. This criterion is intended to address those situations where a new development may be close to other buildings that could be residential and/or which could adversely affect the plume's dispersion by way or their size and/or height.

Appendix C – IAQM Mitigation Measures

IAQM mitigation measures

The risk category identified for each construction activity in Section 6.4 has been used to determine the level of mitigation required, which is presented herein. In general, it is considered that the Site is in requirement of medium risk dust control measures. However, high risk measures should be applied for demolition activities, to be commensurate with the risk of dust soiling. It is recommended that the 'desirable' and 'highly recommended' measures set out below are incorporated into the DMP and approved by MBC prior to commencement of any work on site.

TABLE C1.1 MITIGATION FOR ALL SITES

Mitigation Measure	Risk		
	Low	Medium	High
Site Management			
Develop a dust management plan.		XX	XX
Display the name and contact details of the person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.	XX	XX	XX
Display the head or regional office contact information.	XX	XX	XX
Record and respond to all dust and air quality pollutant emissions complaints.	XX	XX	XX
Make a complaint log available to the local authority when asked.	XX	XX	XX
Carry out regular site inspections.	XX	XX	XX
Increase the frequency of site inspections when activities with a high potential to produce dust and emissions are being carried out.	XX	XX	XX
Record any exceptional incidents that cause dust and air quality pollutant emissions.	XX	XX	XX
Preparing and maintaining the site			

Mitigation Measure	Risk		
	Low	Medium	High
Plan site layout: machinery and dust causing activities should be located away from receptors.	XX	XX	XX
Erect solid screens and barriers around dust activities.	XX	XX	XX
Fully enclosed site or specific operations where there is high potential for dust production.	X	XX	XX
Avoid site run-off of water and mud.	XX	XX	XX
Keep site fencing, barriers and scaffolding clean.	X	XX	XX
Remove material from site as soon as possible.	X	XX	XX
Operating vehicle/machinery and sustainable travel			
Where applicable, ensure all on-road vehicles comply with the requirements of the London low Emission Zone.	XX	XX	XX
Ensure all non-road machinery (NRMM) comply with the standards set within the guidance.	XX	XX	XX
No vehicle idling.	XX	XX	XX
Avoid the use of diesel or petrol powered generators.	XX	XX	XX
Impose and signpost a maximum speed limit of 10mph.	X	XX	XX
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing).	XX	XX	XX
Operations			
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques.	XX	XX	XX
Ensure adequate water supply on the site for effective dust/particulate mitigation.	XX	XX	XX
Use enclosed chutes, conveyors and covered skips.	XX	XX	XX
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment.	XX	XX	XX
Waste Management			
Reuse and recycle waste to reduce dust from waste materials.	XX	XX	XX
Avoid bonfires and burning of waste materials.	XX	XX	XX
Note: X denotes Desirable, XX denotes Highly Recommended			

TABLE C1.2 MEASURES SPECIFIC TO DEMOLITION

Mitigation Measure	Risk		
	Low	Medium	High
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	X	X	XX
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.	XX	XX	XX
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	XX	XX	XX
Bag and remove any biological debris or damp down such material before demolition.	XX	XX	XX
Note: X denotes Desirable, XX denotes Highly Recommended			

TABLE C1.3 MEASURES SPECIFIC TO EARTHWORKS

Mitigation Measure	Risk		
	Low	Medium	High
Re-vegetate earthworks and exposed areas.		X	XX
Use hessian or mulches where it is not possible to re-vegetate or cover with topsoil.		X	XX
Only remove secure covers in small areas during work.		X	XX
Note: X denotes Desirable, XX denotes Highly Recommended			

TABLE C1.4 MEASURES SPECIFIC TO CONSTRUCTION

Mitigation Measure	Risk		
	Low	Medium	High
Avoid scabbling (roughening of concrete surfaces) if possible	X	X	XX
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out,	X	XX	XX

Mitigation Measure	Risk		
	Low	Medium	High
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.		X	XX
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.		X	X
Note: X denotes Desirable, XX denotes Highly Recommended			

TABLE C1.5 MEASURES SPECIFIC TO TRACK-OUT

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