REPORT

14 BEDFORD ROW & 12-14 JOCKEY'S FIELDS

LONDON, WC1R 4ED

AIR QUALITY ASSESSMENT
RWDI # 2406173 02
April 19, 2024

SUBMITTED TO

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14 BEDFORD ROW
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AIR QUALITY ASSESSMENT

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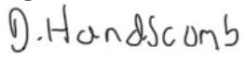
Authored By Dominic Handscomb	**Position** Environmental Consultant	**Signature** 	**Date** 15-04-2024
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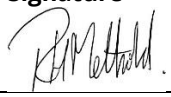
Approved By Rick Methold	**Position** Director	**Signature** 	**Date** 19-04-24

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01	**Draft**	**Draft report for client comment**	**15-04-2024**
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1 INTRODUCTION

1.1 Project Overview

RWDI was commissioned to prepare an air quality assessment for the proposed development at 14 Bedford Row & 12-14 Jockey's Fields, London, WC1R 4ED. The site falls within the administrative boundary of the London Borough of Camden (LBC).

This assessment has been prepared to determine the likely air quality impacts from the development of the site on existing and introduced receptors, to accompany a planning application.

1.2 Report Structure

Details of the site and the proposed development are presented in the following section of this report. Relevant air quality policy and guidance are outlined in Section 3 and the assessment methodology is detailed in Section 4. The existing baseline conditions are presented in Section 5. Impacts from construction and operation are assessed in Sections 6 and 7, respectively. The air quality neutral assessment is detailed in Section 8 and mitigation options are presented in Section 9. The assessment is summarised in Section 10.

2 SITE DETAILS

2.1 Site Description

The proposed development comprises one building block, ground floor plus four storeys, located on 14 Bedford Row and the building blocks, ground floor plus three storeys along 12 to 14 Jockey's Fields connected by a central link building at lower ground and ground level. The existing buildings are currently unoccupied and previously being used as office space. The immediate surrounding area comprises of predominantly residential and office space.

2.2 Proposed Development

The proposed development comprises of a full strip-out, small demolition, and refurbishment to convert the existing vacant office space, land use class E, into 65 new rooms, land use class C1(apart-hotel).

2.3 Study Area

Locations where people or wildlife may be adversely affected by changes in air quality or dust soiling are considered relevant receptors for air quality.

For dust soiling, high-sensitivity receptors may include both residential and ecological receptors, whilst medium to low sensitivity receptors may include amenity areas and workplaces.

No ecological receptors have been identified in the vicinity of the development site. Therefore, ecological receptors have been scoped out of this assessment.

A number of receptors are located in the vicinity of the proposed development site, which could potentially be affected by changes in air quality arising from the construction and operation of the development.

3 LEGISLATION, POLICY AND GUIDANCE

3.1 Introduction

Atmospheric pollutants of general concern associated with the impacts of developments on human receptors are nitrogen dioxide (NO_2) and particulate matter (PM).

NO_2 is produced through the combustion of fossil fuels, used for transport and energy supply. Emissions of oxides of nitrogen (NO_X) from exhausts comprise of nitric oxide (NO) and NO_2. NO undergoes oxidisation in the atmosphere to form NO_2. High concentrations of NO_2 can cause lung inflammation, shortness of breath and coughing, and reduced immunity to lung infections like bronchitis.

PM can result directly as emissions from local sources (primary), or further afield, often having originated as other pollutants and reformed in the atmosphere (secondary). Primary sources of particulates are of most relevance to this assessment and can include emissions from combustion processes and dust from construction activities. Exposure to high concentrations of particulate matter can cause respiratory and cardiovascular illness and death. PM_{10} is defined as a mass fraction of airborne particulates with an aerodynamic diameter of 10 microns (µm) or less, whilst $PM_{2.5}$ is defined as a mass fraction of airborne particulates with an aerodynamic diameter of 2.5 microns or less. PM_{10} and $PM_{2.5}$ are respirable and can be drawn deep into the lungs and cause health problems. The fraction of dust that is larger than 10 µm is filtered by the nose and throat.

3.2 Legislation

The EU Air Quality Directive (Directive 2008/50/EC) [1] came into force in June 2008 and was transposed into legislation in England, Wales, Scotland and Northern Ireland in the Air Quality Standards Regulations 2010 [2], since amended by the Air Quality Standards (Amendment) Regulations 2016 [3]. The Directive introduced legally binding targets for national governments to reduce air pollution to levels at which no or minimal effects on human health are likely to occur. The obligation to meet the requirements of the Directive falls primarily upon the Secretary of State for the Environment in England, and appropriate Ministers in the Devolved Administrations, who are designated as the appropriate "competent authority".

Defra's Air Quality Plan for Nitrogen Dioxide (NO_2) in UK (2017) [4] details the government's plan for reducing roadside NO_2 levels and achieving EU limit values. A supplement to the plan was published in October 2018.

The Air Quality (England) Regulations 2000 [5], as amended [6] define air quality 'objectives' for a number of key pollutants. The air quality objectives are set at a range of different levels and averaging times for different pollutants.

The NO_2 and PM objectives are summarised in Table 3.1 overleaf. The annual mean (long-term) objective applies at locations where individuals might be expected to spend a large majority of their time, for example residential properties. In the case of the hourly mean (short-term), this applies at locations where people might reasonably be expected to spend at least an hour (such as outdoor spaces and leisure areas).

Table 3.1: Summary of Relevant UK Air Quality Objectives for Protection of Human Health

Pollutant	Air Quality Objective		Date to be Achieved by
NO_2	40 µg/m^3	annual mean	31 December 2005
	200 µg/m^{3}not to be exceeded more than 18 hours in a year	hourly mean	31 December 2005
PM_{10}	50 µg/m^{3}not to be exceeded more than 35 times a year	24-hour mean	31 December 2004
	40 µg/m^3	annual mean	31 December 2004
$PM_{2.5}$	20 µg/m^3	annual mean	1 January 2020
	15% reduction urban background	annual mean	2010-2020

The Environment Act 1995 [7] introduced the requirement for local authority management of air quality. Part IV of the Act details the duties of local authorities in carrying out their local air quality management (LAQM) responsibilities.

The UK government published the Environment Act 2021 [8]. The act makes provision of about targets, plans and policies for improving the natural environmental, and the environmental protection about air quality. The act highlights that the Secretary of State must by regulations set a target value for $PM_{2.5}$ annual mean concentrations in ambient air [9].

A new Air Quality Strategy (AQS) for England has been published in April 2023 [10]. The AQS sets out the actions the government expects local authorities to take in support of achieving government long-term air quality goals, including new $PM_{2.5}$ targets values summarised in Table 3.2.

Table 3.2: $PM_{2.5}$ UK TARGET VALUES

Pollutant & Metric	Target	Target Year
$PM_{2.5}$ annual mean concentration	Interim target: 12 µg/m^3	2028
	Legally binding target: 10 µg/m^3	2040
$PM_{2.5}$ population exposure	Interim target: 22% reduction in exposure compared to 2018	2028
	Legally binding target: 35% reduction in exposure compared to 2018	2040

The Environmental Protection Act 1990 (EPA) [11] deals with statutory nuisance. Nuisance caused by dust is regulated by the statutory nuisance provisions under Part III and is defined in s.79(1)(d) as: "*Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance*".

Statutory nuisance is not intended to secure a high level of amenity but rather to act as a basic safeguard on emissions. The perpetrator of any alleged nuisance has a defence of best practicable means (BPM) which provides a basis for balancing the interests of the site and residents.

There are no UK standards or statutory guidance relating to deposited dust and nuisance, although a deposition rate of 200 mg/m^2/day is often used as a threshold for potentially significant nuisance effects.

The Clean Air Act 1993 (CAA) [12] details the legislative requirements for the heights of chimneys and flues where the burn rates exceed certain criteria. For appliances fuelled by gaseous matter the relevant criterion value is 366.4kW.

3.3 Policy and Guidance

National Policy and Guidance

The National Planning Policy Framework (NPPF) was first published in 2012 and subsequently updated in December 2023 [13]. Paragraph 192 states:

"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."

The roles of the planning authority and pollution control authorities are defined in paragraph 194:

"*The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities*."

The National Planning Practice Guidance (NPPG) [14] provides guiding principles on how planning can take into account of the impact of new development on air quality. It includes guidance on:

- air quality considerations for planning;
- plan-making and air quality;
- air quality and neighbourhood planning;
- available information;
- when air quality considerations could be relevant to development planning;
- specific issues when assessing air quality impacts;
- required detail for air quality assessments; and
- mitigating air quality impacts.

The guidance provides a flow chart detailing the process that should be followed in determining an application. It indicates that an application should proceed to decision with appropriate planning conditions or obligations if the proposed development, with mitigation in place, would not lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or fail to comply with the requirements of the Habitats Regulations [15].

London Air Quality Policy and Guidance

The London Plan (LP) [16] Policy SI1 'Improving Air Quality' recognises the importance of reducing air pollution and improving air quality to London's development and the health and wellbeing of its people. The policy states the following in respect of planning decisions:

"Development proposals should:

A Development Plans, through relevant strategic, site-specific and area based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

B To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

1) Development proposals should not:

a) lead to further deterioration of existing poor air quality.

b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits.

c) create unacceptable risk of high levels of exposure to poor air quality.

2) In order to meet the requirements in Part 1, as a minimum:

a) development proposals must be at least Air Quality Neutral

b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures.

c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1.

d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

C Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating.

1) how proposals have considered ways to maximise benefits to local air quality, and

2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

D In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.

E Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development."

Clearing the Air - The Mayor's Air Quality Strategy [17] includes an 'air quality neutral' policy which aims to mitigate against cumulative impacts on air quality in London. The 'maximising the air quality benefits of a low to zero carbon energy supply' measure included in the Strategy aims to use the planning process to ensure that zero to low carbon energy supply does not have a negative impact on local air quality. The 'reducing emissions from construction and demolition sites' policy is supported by supplementary planning guidance.

The Mayor's Supplementary Planning Guidance (SPG) The Control of Dust and Emissions During Construction and Demolition [18] seek to reduce emissions of dust, PM_{10} and $PM_{2.5}$ from construction and demolition activities in London, providing important guidance on the implementation of the London Plan Policy 7.14. It also aims to manage emissions of nitrogen oxides (NO_x) from construction and demolition machinery by means of a non-road mobile machinery ultra-low-emission zone (ULEZ). The SPG considers that during the pre-application phase,

boroughs should provide advice on controlling dust and emissions and should set out their requirements for the planning application.

The SPG states that during the application phase the developer should submit an Air Quality and Dust Risk Assessment (AQDRA), following the guidance in the controlling dust and emissions SPG; the AQDRA should confirm that an Air Quality and Dust Management Plan (AQDMP) will be submitted to the local authority prior to works commencing on-site.

The AQDRA needs to provide a summary of the risk of soiling, health effects and effects on the natural environment from dust produced during demolition, earthworks, construction and trackout and to recommend emission control measures to be implemented as part of the scheme.

These activities can lead to three separate dust impacts:

- the risk of health effects due to an increase in exposure to PM_{10};
- annoyance due to dust soiling; and
- harm to ecological receptors.

The Mayor's Sustainable Design and Construction SPG [19] states that all new gas boilers should produce low levels of NO_x and that developments should take measures to reduce and mitigate exposure to air pollution. It details emissions benchmarks for building emissions to avoid cumulative increases in NO_x and PM emissions across London as a whole and therefore be 'Air Quality Neutral'. These are considered as minimum benchmarks that will be kept under review and updated in line with technological and commercial advances.

The 'Air Quality Neutral' policy applies to all 'major developments' (as defined in the London Plan). NO_x and PM_{10} emissions from the building and transport elements of the scheme need to be calculated, where relevant, and compared to the benchmarks. Where schemes do not meet the benchmarks after mitigation has been implemented on site, the developer will be required to off-set emissions off site. Standards have been recommended for gas boilers and they should achieve a NO_x rating of less than 40 mg NO_x/kWh. It is noted that these emission rates are often now standard for developers.

The guidance acknowledges that developers may not procure plant until planning permission has been obtained. Developers are therefore required to provide a written statement of their commitment and ability to meet the emissions standards within their Air Quality Assessments. Guidance indicates that when securing these emission standards, it is best to agree maximum emission limits, as opposed to specifying the technology, as technology may improve in the time between planning permission being granted and the development implemented.

Offsetting measures where the schemes do not meet the 'air quality neutral' benchmark can include NO_X and PM abatement measures in the vicinity of the development, working with the local authority and nearby property owners and secured by planning condition or S106 agreement. Any agreement for off-site measures, including financial contribution, needs to be considered by any restrictions imposed by the Community Infrastructure Levy regulations. These measures can include:

- green planting/ walls with special consideration given to planting that absorbs or suppresses pollutants;

- upgrades or abatement to combustion plant;
- retrofitting abatement technology to vehicles and flues; and
- exposure reduction.

In 2023, GLA has published the latest version of the air quality neutral assessment [20] guidance document. These documents have been prepared to support the implementation of London Plan Policy SI1.

Local Air Quality Policy

Under the Local Development Framework (LDF) strategy, local authorities are required to prepare an overarching Core Strategy document. The LBC Local Plan [1.21] was adopted in July 2017 and forms part of the Core Strategy. Policy CC4: Air Quality of LBC's Local Plan details how the council will seek to reduce the potential adverse air quality impacts of new developments:

"The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.

The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.

Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan."

In January 2021, LBC published supplementary planning guidance Air Quality CPG [1.22] to support policy CC4 in LBC's Local Plan. The document sets out how air quality is dealt with in planning applications providing a checklist to determine whether a development requires consideration with regard to the type of air quality assessment to be undertaken. The document sets out the scope of what must be included in air quality assessments within the borough and the relevant mitigation and monitoring required by developments.

LBC is preparing a new local plan for the next 15 years and a draft local plan has undergone consultation between January and March 2024 [1.23]. Policy A3 Air Quality of the draft local plan sets out the council's approach to air quality within the borough.

"The Council will expect development to contribute to improving air quality in Camden to protect public health. The Council will:

i. Require all development to be at least air quality neutral in accordance with the London Plan and associated guidance. An air quality positive approach is encouraged.

ii. *Require the following types of development to submit an Air Quality Assessment, where requested by the Council, the Air Quality Assessment must be supported by detailed air quality modelling:*
a. All major developments;
b. Any development that introduces sensitive uses or occupiers into an area of poor air quality;
c. Development that involves significant demolition, construction and/or earthworks;
d. Any development that could have a significant impact on air quality, either directly or indirectly; or
e. Any development involving a biomass or gas Combined Heat Plant (including connections to existing networks where the increased capacity is not already covered in an existing Air Quality Assessment

iii. *Require all development to use design solutions to reduce exposure to existing poor air quality and address local problems of air pollution.*

iv. *Resist applications for sensitive uses (such as childcare, schools or accommodation for elderly people) in areas of particularly poor air quality.*

v. *Resist developments that introduce sensitive uses (e.g., housing) in locations of poor air quality, unless they are designed to substantially mitigate the impact.*

vi. *Require all development to demonstrate how they plan to meet the GLA emission standards for Non-Road-Mobile-Machinery. We will apply the emission standards for the Central Activities Zone across the whole borough.*

vii. *Require applicants to consider emergency backup power for development sites (in the operational phase) early in the design process. Non-combustion solutions are expected.*

viii. *Resist proposals for solid / wood burning heating or catering systems.*

ix. *Require applicants to give consideration to the actions identified in the Council's Air Quality Action Plan when designing and delivering development.*

x. *Require applications including commercial cooking to demonstrate how they will mitigate their impact on air quality.*

3.4 Non-Statutory Guidance

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have produced a document entitled: *Land-Use Planning & Development Control: Planning for Air Quality* [24] that provides guidance on how to ensure that air quality is properly accounted for in the development control process. This guidance provides advice on describing air quality impacts and assessing their significance.

The Institute of Air Quality Management (IAQM) has published specific *'Guidance on the assessment of dust from demolition and construction'* [25] to provide guidance and good-practice approaches on the assessment and mitigation of dust impacts from demolition and construction site activities. The impacts naturally depend on any incorporated mitigation and the emphasis in these guidelines is on classifying the risk of dust impacts from a site as a basis for the identification of mitigation that is commensurate with such risk.

4 METHODOLOGY

4.1 Assessment Approach

This air quality assessment has been produced using the information available and procedures as follows:

I. review LBC's air quality monitoring data [26], NO_2, PM_{10} and $PM_{2.5}$ concentrations available in the London Atmospheric Emissions Inventory (LAEI) 2019, forecast years 2025 and 2030 [1.27] and Defra's background maps [1.28] to establish baseline air quality and identify the main pollution sources in the area and compare with the UK air quality objectives;
II. consider the local environment to identify potentially sensitive receptors, both existing and proposed, that could be affected by changes in air quality as a result of the construction and operation of the proposed development;
III. assess qualitatively the potential dust and air quality impacts of the construction activities and control measures considered necessary during these activities;
IV. screen the requirement to undertake detailed assessment of operational traffic and energy plant;
V. conduct an air quality neutral assessment in accordance commissioned by GLA; and
VI. identify and present relevant mitigation options recommended to reduce the potential impacts from the proposed development and, if necessary, to meet relevant planning and environmental requirements.

4.2 Screening Criteria

The assessment follows the procedure as defined in the IAQM/EPUK guidance document for 'Land-use Planning & Development Control: Planning for Air Quality'.

The IAQM/EPUK guidance provides criteria for establishing whether a development will require an air quality assessment. Stage 1 criteria are designed to screen out smaller developments and developments where air quality impacts can be considered to have insignificant effects. The criteria are set out in a two-stage approach:

In order to meet the criteria in Stage 1, the development must have:

- 10 or more residential units or a site area of more than 0.5 ha; or
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha.
- This must be combined with any of the following:
- more than 10 parking spaces within the development; or
- the development has a centralised energy facility or combustion process.

4.3 Construction Dust Screening

The IAQM document 'Guidance on the assessment of dust from demolition and construction', provides criteria for establishing whether a development will require a construction dust assessment. The guidance indicates that an assessment is required if there is a human receptor within 250 m of the boundary of the site or 50 m of the

trackout route (up to 250m from site entrance) or if there is an ecological receptor within 50 m of the boundary of the site or track out routes (up to 250m from site entrance).

4.4 Construction and Operational Traffic Screening

The EPUK/IAQM guidance provides criteria for establishing whether a development will require a construction or operational traffic detailed assessment. The guidance indicates that an assessment of traffic emissions is only likely to be required for sites that will generate an additional annual average daily traffic (AADT) of greater than 100 LDVs and 25 HDVs within an AQMA.

4.5 Operational Energy Plant Screening

The EPUK/IAQM guidance for new development provides criteria for establishing whether a development will require an energy plant assessment during the operational phase. The guidance indicates that, typically a detailed modelling assessment of the proposed onsite energy plant is unlikely to be required where the single or combined NO_X emission rate less than 5 mg/s [1]. This is also dependent on the location and height of associated flues.

4.6 Site Suitability

The assessment has considered whether proposals will introduce new apart-hotel rooms into an existing area of poor air quality. Baseline concentrations have been considered for sensitive receptors introduced by the proposed development and compared against national and local air quality objectives and WHO guideline values for NO_2, PM_{10} and $PM_{2.5}$.

4.7 Air Quality Neutral Assessment

An air quality neutral assessment has been undertaken using guidance published by GLA.

[1] As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NOx gas boiler or a 30 kW CHP unit operating at <95mg/Nm^3.

5 BASELINE CONDITIONS

5.1 Local Authority

The site is located within the administrative boundary of the LBC. The council conducts air quality monitoring at six automatic stations, and over 250 NO_2 diffusion tube monitoring locations within the borough as part of its LAQM duties. The entire LBC was designated as an AQMA in 2002 in respect of NO_2 annual mean concentrations and PM_{10} daily mean concentrations.

Automatic Monitoring

The closest automatic monitoring station to the proposed development site are summarised in Table 5.1 below. London Bloomsbury, Camden is the closest urban background automatic station to the proposed development. NO_2 and $PM_{2.5}$ concentrations at this location were below AQOs between 2019 and 2023.

Table 5.1: Continuous monitoring site measured NO_2, PM_{10} and $PM_{2.5}$ Concentrations (µg/m³)

Site ID	Distance from site (km)	Type	Pollutant	2019	2020	2021	2022	2023
London Bloomsbury (BL0)	0.7	Urban Background	NO_2	32 (0)	28 (0)	27 (0)	26 (0)	24 (0)
			PM_{10}	18 (9)	16 (4)	16 (0)	17 (5)	13 (0)
			$PM_{2.5}$	11	9	9	9	8

Note: Exceedances of the annual mean NO_2, PM_{10} and $PM_{2.5}$ AQOs are highlighted in bold. Number of exceedances of the hourly mean NO_2 and daily mean PM_{10} AQOs are presented in brackets.

Diffusion Tube Sites

LBC also conduct NO_2 monitoring using passive diffusion tubes. Monitoring data between 2018 and 2022 for the nearest NO_2 diffusion tube sites are presented in Table 5.2. All of the monitoring locations were below the AQO of 40 µg/m³ for mean annual NO_2 in all reported years.

Defra guidance TG-(22) states that when the annual mean NO_2 concentration at diffusion tube locations is less than 60 µg/m³, the short term (1-hour) objective NO_2, is unlikely to be exceeded. Annual mean NO_2 concentrations were below 60 µg/m³ at all locations presented in Table 5.2

Table 5.2: Diffusion tube monitoring Annual Mean NO_2 concentrations (µg/m³)

Description	Distance from site (km)	Type	2018	2019	2020	2021	2022
CAM57-Farringdon 11 - Gray's Inn Road South	0.2	Roadside	-	-	27	27	30
CAM58-Grays Inn Road South 1 - Northington Street / King's Mews	0.2	Roadside	-	-	-	24	25
CAM 59 - greys Inn Road South 2 - John Street	0.3	Roadside	-	-	-	25	26
CAM 60 - Grays Inn Road South 3 - Roger Street	0.3	Roadside	-	-	-	28	31

Notes: Exceedances of the annual mean NO_2 AQO are highlighted in **bold**. (-) No data available

5.2 LAEI Maps

Predicted ambient pollutant concentrations are available from the LAEI. The highest annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations, at the façade of the proposed development, are presented in Table 5.3. The LAEI 2025 and 2030 concentrations met the annual mean AQO for NO_2, PM_{10} and $PM_{2.5}$.

Table 5.3: LAEI Annual mean concentrations (µg/m³)

Pollutant	2025	2030
NO_2	28	23
PM_{10}	19	18
$PM_{2.5}$	12	11

5.3 Defra Background Maps

Defra predicted background pollutant concentrations are available for 1 km^2 grid squares across the UK . Concentrations of NO_2, PM_{10} and $PM_{2.5}$ are summarised in Table 5.4 for the grid square centred on 530500, 182500, which is the closest representative grid square to the proposed development site. NO_2, PM_{10} and $PM_{2.5}$ background concentrations are within the AQOs in 2023, and 2025 (proposed opening year).

Table 5.4: Predicted Defra background pollutant concentrations (µg/m³)

Pollutant	Annual Mean Concentration (µg/m3)	
	2023	2025
NO_2	34.8	33.5
PM_{10}	19.1	18.6
$PM_{2.5}$	12.1	11.8

5.4 Summary of Baseline Conditions

Annual mean NO_2 concentrations measured at the nearest diffusion tube monitoring locations to the proposed development were below the UK AQO between 2020 and 2022. The urban background monitoring location shows that NO_2, PM_{10} and $PM_{2.5}$ concentrations met the UK AQO. PM_{10} and $PM_{2.5}$ were relatively constant between 2019 and 2023 at the nearest urban background site. However, $PM_{2.5}$ concentrations were above the UK target values and WHO guideline values.

6 CONSTRUCTION IMPACTS

6.1 Construction Dust

In line with IAQM guidance an assessment of construction dust is required as there are human receptors within 20m of the site and 20m of the construction vehicle route (up to 250m from site entrance).

The assessment follows the IAQM guidance and has been used to identify appropriate mitigation measures proportionate to the level of risk, to reduce the effects such that they are not significant.

The assessment of human health and dust soiling is reported in Section 6.3.

6.2 Construction Traffic

There are likely to be less than 25 no. construction heavy duty vehicle (HDV) movements to and from the site per day during the construction period. Therefore, the additional AADT would be below the EPUK/IAQM screening criterion of 25 HDVs within an AQMA. Impacts from construction traffic are expected to be negligible and are not considered further in this assessment.

6.3 Magnitude of Dust Emissions

The dust emissions magnitude, area sensitivity and dust risk category were established in accordance with the IAQM guidance [25].

Demolition

Demolition works mainly comprises of internal walls and partitions during the strip out and a small external wall with estimated total demolition volume of less than 12,000 m^3. The main demolition works are proposed to be carried out using hand held breakers. The site is considered to have a 'Small dust emission magnitude for demolition.

Earthworks

No earthworks are planned as part of the construction phase of the proposed development hence the effects from earthworks are scoped out for this assessment.

Construction

The total building volume to be constructed is expected to be less than 12,000 m^3. The proposed construction materials include concrete, brick, timber, glass, and limited new steelwork for structural reinforcement. The site is considered to have a "Small" dust emission magnitude for construction.

Trackout

The peak number of HDV outward movements per day is expected to be less than 20. All HDV's will travel along Bedford Row towards the A401. The site is considered to have a "Small" dust emission magnitude for trackout.

The dust emission magnitudes are summarised overleaf in Table 6.1.

Table 6.1: Dust Emission Magnitude Summary

Activity	Dust Emission Magnitude
Demolition	**Small**
Construction	**Small**
Trackout	**Small**

6.4 Sensitivity of the Area

Properties are located within 20m to the north of the site include 15 to 18 Bedford Row and 15 to 17 Jockeys Fields, and to the south of the site include 10 to 13 Bedford Row and 8 to 13 Jockeys Fields. There are approximately less than 20 receptors with a high sensitivity to dust soiling and human health impacts within 20m of the site boundary and between 10 to 100 within 20m of the trackout route, as illustrated in Figures 6.1 and 6.2. Nearby receptors are predominantly commercial and residential properties, which have a high sensitivity to both dust soiling and human health impacts.

The sensitivity of the area to dust soiling impacts is assessed as 'High' for demolition, construction and trackout activities. The sensitivity of the area to human health impacts from all on-site activities is assessed as 'Low' due to the number and proximity of sensitive receptors and a background annual mean PM_{10} concentration less than 24 $\mu g/m^3$ in the vicinity of the site. The sensitivity of the area is summarised in Table 6.2.

Table 6.2: Sensitivity of the area Summary

Sensitivity of the Area	Demolition	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Low	Low	Low

6.5 Dust Risk

The likely risk of dust effects, based on the contents of Tables 6.1 and 6.2, at nearby sensitive receptors without mitigation in place is summarised in Table 6.3. There is a 'Medium' risk from demolition activities causing dust

soiling effects at local receptors and a 'Low' risk from construction and trackout activities. There is a 'Negligible' risk of health effects from demolition, construction and trackout activities.

Table 6.3: Dust Risk Category Summary

Summary	Demolition	Construction	Trackout
Dust Soiling	Medium Risk	Low Risk	Low Risk
Human Health	Negligible	Negligible	Negligible

Based on the results of the dust risk assessment, appropriate best-practice construction dust mitigation measures commensurate to the level of risk have been identified in accordance with the GLA [29] and IAQM guidance and are presented in Section 9.

With appropriate mitigation in place, any dust effects can be minimised and residual dust effects can be considered to be not significant.

Figure 6.1 Site Boundary Dust Risk Buffer

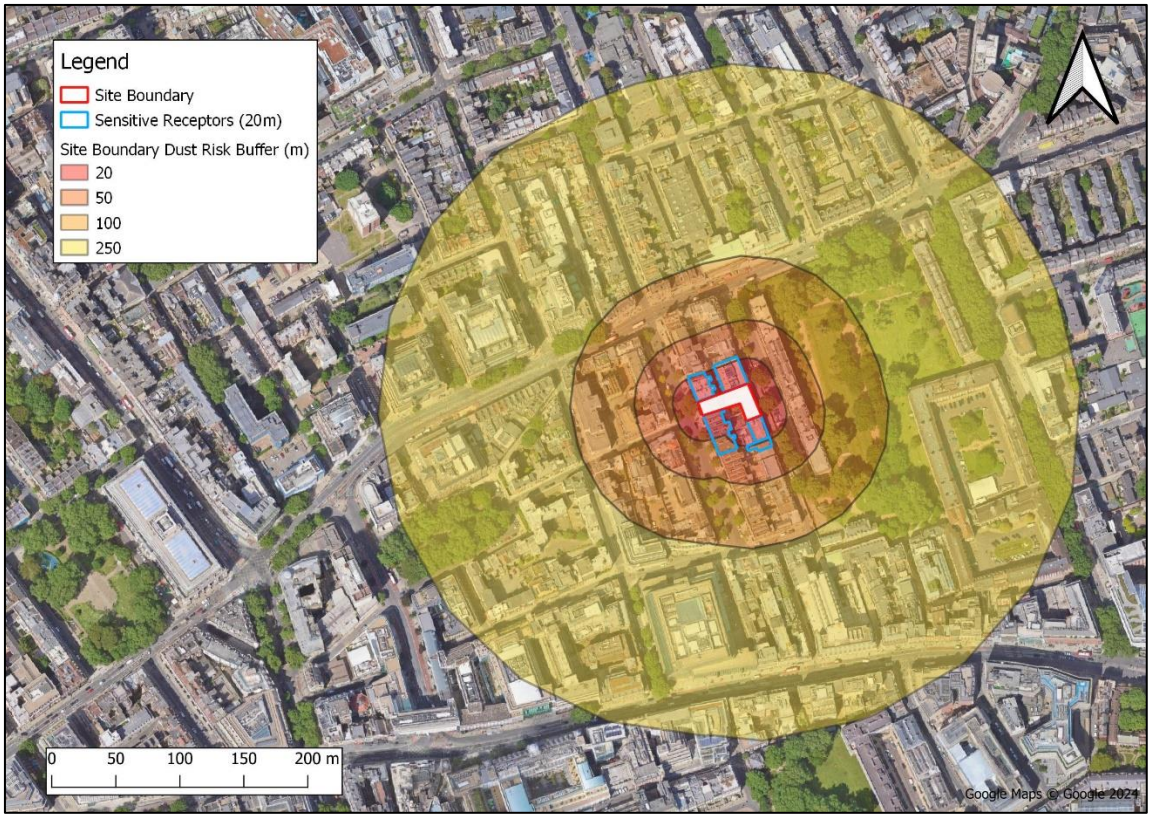

Figure 6.2 Trackout Route Dust Risk Buffer

7 OPERATIONAL IMPACTS

7.1 Screening

The proposed development will introduce 65 no. new apart-hotel rooms and will not be extending beyond the current footprint. The floor space will be more than 1,000 m^2. The development will not introduce any parking spaces and all onsite energy generation is proposed to be electric.

7.2 Operational Traffic Assessment

The development does not propose any car parking spaces. Based on this information the trip generation is expected to be negligible therefore the operational traffic impacts are unlikely to be significant in terms of local air quality and therefore not considered further in this assessment.

7.3 Operational Onsite Energy Generation Assessment

The development will not include a centralised energy facility. Onsite energy generation is proposed to be electric. Therefore, a detailed assessment of operational energy plant emissions is not required and therefore has not considered further in this assessment.

7.4 New Receptors

The proposed development will introduce new apart-hotel rooms. Baseline conditions, as presented in Section 5, indicate that NO_2, PM_{10} and $PM_{2.5}$ annual air quality objectives are currently being met and are expected to be met by the opening year. Therefore, the proposed development will not introduce new receptors into an area where air quality objectives are breached, and the site is appropriate for the proposed use.

The development will introduce new receptors into an area where $PM_{2.5}$ concentrations exceed future UK target and the WHO guideline value of 10 µg/m^3. However, in order to minimise exposure to $PM_{2.5}$ concentrations below future target values the design team is exploring the option to include a ventilation strategy, for example mechanical ventilation with heat recovery (MVHR), particulate matter filtration and air inlets located away from nearby road sources. With a ventilation strategy in place, the proposed development is expected to meet the annual mean $PM_{2.5}$ future UK target values and WHO guideline values.

8 AIR QUALITY NEUTRAL ASSESSMENT

8.1 Building Emissions

The proposed design includes the provision of all energy generation being electric, hence the proposed development is not expected to have building emissions associated with heating and hot water. The proposed development will meet requirements in the Sustainable Design and Construction SPG and the 'Air Quality Neutral' policy and hence building emissions are scoped out of this assessment.

8.2 Transport Emissions

The development will not introduce new car parking. Therefore, it is expected there will be no additional car trip generations compared to the previous land use. Based on this information, the proposed development is expected to meet the requirements in the 'Air Quality Neutral' policy and hence transport emissions are scoped out of this assessment.

Based on the information presented in this section, the proposed development is air quality neutral.

9 MITIGATION AND CONTROL

9.1 Construction

The construction activities associated with the proposed development are predicted to have, at worst, a 'Medium' risk for dust soiling and a 'Negligible' risk for health effects.

Impacts associated with the proposed development are likely to be in the form of dust generated primarily during construction phase activities. The use of appropriate mitigation measures throughout the construction phase will ensure that impacts are minimised or removed.

Based on the results of the dust risk assessment, it is recommended that the following general best-practice measures taken from GLA and the IAQM guidance be adopted.

Table 9.1: Recommended Mitigation Measures- Construction Phase

Management Category	Mitigation Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundaries. This may be the environment manager/engineer or the site manager.
	Display the head or regional office contact information.
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority when asked.
	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. (Desirable)
	Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months

Management Category	Mitigation Measure
	before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction
Preparing and maintaining the site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle / machinery and sustainable travel	Ensure all on-road vehicles comply with the relevant Emission requirements and NRMM standards, where applicable.
	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). (Desirable)
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste Management	Avoid bonfires and burning of waste materials.
	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). (Desirable)

Management Category	Mitigation Measure
Measures specific to Demolition	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.
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.
	Bag and remove any biological debris or damp down such material before demolition.
Measures specific to Construction	Avoid scabbling (roughening of concrete surfaces) if possible. (Desirable)
	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. (Desirable)
Measures specific to 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. (Desirable)
	Avoid dry sweeping of large areas. (Desirable)
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. (Desirable)
	Record all inspections of haul routes and any subsequent action in a site log book. (Desirable)
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). (Desirable)

9.2 Operational

New Receptors

By the opening year, the results show that NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are expected to meet the air quality objectives (AQOs) within the proposed development. MVHR and particulate filtration are being explored as part of the design to meet future UK $PM_{2.5}$ target values and WHO guideline values.

Air Quality Neutral Assessment

The proposals include the provision of electric heat generation and no parking facilities. Therefore, the proposed development will meet requirements in the Sustainable Design and Construction SPG and the 'Air Quality Neutral' policy.

Based on this information, no further mitigation measures are required.

10 CONCLUSIONS

An assessment of the air quality impacts associated with the construction and operational phases of the proposed development is presented in this report.

The results of the dust risk assessment indicate that construction activities, at worst, have a 'Medium' risk for demolition, and "Low" risk of dust soiling, and a 'Negligible' risk of health effects from PM_{10} at nearby receptors without mitigation. These impacts can be minimised through the implementation of appropriate mitigation measures. These mitigation measures have been identified in Section 9 of this report. With mitigation in place, residual dust effects from construction will be minimal and are considered to be not significant.

Air quality impacts from construction and operational traffic are considered to be negligible, due to the expected low number of vehicle movements during the construction and operational phases of the proposed development.

The air quality neutral assessment shows that the proposed development will fully meet the requirements in respect of transport and building emissions.

The air quality assessment shows that the proposed development will not introduce new receptors into an area where the UK air quality objectives are exceeded by the proposed opening year. The design team is exploring a ventilation strategy to protect new residents within the proposed development to $PM_{2.5}$ concentrations in order to meet the future UK air quality target values and WHO guideline values.

The proposed development is considered to comply with relevant national, regional and local planning policy and air quality does not present a constraint to the development proposals.

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