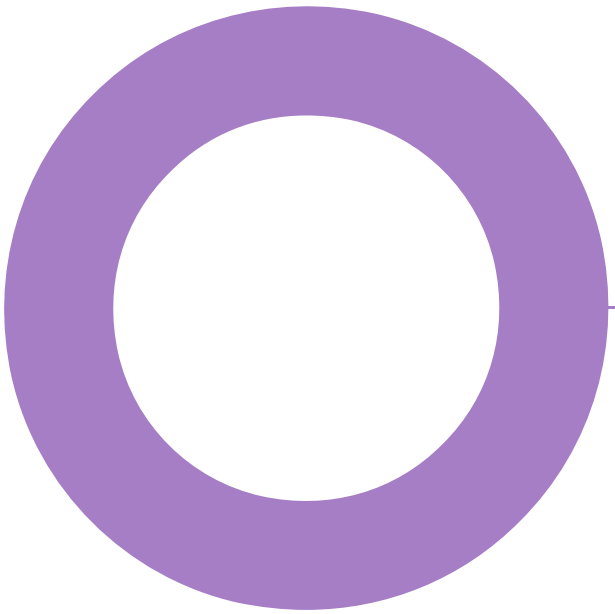
HOARE LEA

Waterhouse Square. London.
Prudential Assurance Company Limited.

AIR QUALITY
AIR QUALITY ASSESSMENT

REVISION 01 – 20 OCTOBER 2023



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	20/10/2023	First Draft	TB/LC	AD	CE
01	20/10/2023	First Issue	TB	AD	CE

Project number: 34/22332
Document reference: 3422332-HLE-RP-AQ-Waterhouse Square-Rev01.docx

Contents.

Executive Summary.

Hoare Lea have been commissioned by WT Partnership on behalf of Prudential Assurance Company Limited to undertake an Air Quality Assessment to support the planning application for the proposed refurbishment and extension of 2 Waterhouse Square located within Camden, London, EC1N 2ST (the 'Application Site').

The proposals comprise the refurbishment and extension of the existing building, 2 Waterhouse Square, to provide high quality commercial floorspace (Class E) and a flexible commercial (Class E) and bar (sui generis). The proposals seek to enhance the existing building, reinstate the historic courtyard and repair the historic fabric of the Site. The proposals also include external alterations for new facades and a glazed roof, with entrances and servicing being reconfigured. Cycle parking provision will be provided at the ground and lower ground floor.

The baseline assessment shows that the Application Site is located within the London Borough of Camden Air Quality Management Area (AQMA). There were no exceedances of the annual mean Nitrogen Dioxide (NO_2) Air Quality Objective (AQO) and World Health Organisation (WHO) guideline or the indicative threshold of 60 $\mu g/m^3$ for the 1-hour mean NO_2 AQO and WHO guideline measured at passive diffusion tubes or automatic monitoring stations within the vicinity of the Application Site in the reporting year of 2022.

Defra predicted background concentrations indicates that there are no likely exceedances of the annual mean NO_2 or Particulate Matter (PM_{10} and $PM_{2.5}$) AQOs and WHO guidelines within the 1 km by 1 km grid square that the Application Site falls within. The London Atmospheric Emissions Inventory (LAEI) modelled concentrations, for 2025, are below the relevant AQOs and WHO guidelines for NO_2 and Particulate Matter (PM_{10}) at the western façade of the Application Site which represents worst-case on-site concentrations. For Particulate Matter ($PM_{2.5}$), predicted concentrations were below respective AQO but above respective WHO guideline.

The impacts of demolition and construction work on dust soiling and ambient fine particulate matter concentrations have been assessed and appropriate mitigation measures have been identified. Provided these mitigation measures are implemented and included within a dust management plan, for example through a planning condition, the residual impacts are considered to be not significant.

The traffic generated by the Proposed Development was supplied by Velocity Transport Planning and has been screened against the criteria set-out in the Environmental Protection United Kingdom (EPUK) and Institute of Air Quality Management (IAQM) planning guidance to determine the need for a detailed assessment. This showed that the potential impact of additional road traffic on local air quality is considered insignificant and a detailed assessment is not required.

The proposed energy strategy will be all electric, utilising Air Source Heat Pumps (ASHP) and a Photovoltaics (PV) array, with one backup generator, located in the roof plantroom. The generators are used for back-up and life-safety purposes only. The generator flues will terminate and exhaust at roof level. As no combustion sources are proposed during normal operation and for the primary energy supply, no local air quality impacts are anticipated. Therefore, a detailed assessment of the impacts of combustion emissions from the energy plant has been screened out of this assessment.

The Proposed Development is considered air quality neutral with regard to building and transport emissions, in line with the London Plan Air Quality Neutral Guidance, and as such no mitigation for either building or transport emissions are required.

A qualitative Site Suitability Assessment shows that NO_2 and PM_{10} concentrations are in compliance with the relevant AQOs and WHO guidelines. For $PM_{2.5}$, the assessment shows that concentrations are in compliance with the relevant AQO but in exceedance of the relevant WHO guideline. However, particulate filtration is proposed as part of the ventilation strategy to be installed on all AHUs. Therefore, the Application Site is considered suitable for office use without mitigation.

Based on the assessment results, the Application Site is considered suitable for the Proposed Development without the inclusion of mitigation, air quality should not be considered as a constraint to the planning consent and the Proposed Development conforms to the principles of the National Planning Policy Framework Plan, the London Plan 2021 policies, the London Borough of Camden (LBC) Local Plan.

1. Introduction.

Hoare Lea have been commissioned by WT Partnership on behalf of Prudential Assurance Company Limited to undertake an Air Quality Assessment to support the planning application for the proposed refurbishment and extension of 2 Waterhouse Square located within Camden, London, EC1N 2ST (the 'Application Site').

1.1 Proposed Development.

The proposals comprise the refurbishment and extension of the existing building, 2 Waterhouse Square, to provide high quality commercial floorspace (Class E) and a flexible commercial (Class E) and bar (sui generis). The proposals seek to enhance the existing building, reinstate the historic courtyard and repair the historic fabric of the Site. The proposals also include external alterations for new facades and a glazed roof, with entrances and servicing being reconfigured. Cycle parking provision will be provided at the ground and lower ground floor.

The proposed energy strategy will be all electric, utilising Air Source Heat Pumps (ASHP) and Photovoltaic (PV) panels, zero emission technologies. Additionally, with one backup generator, located in the roof plantroom. The generator flues will terminate and exhaust at roof level. As no combustion sources are proposed for the primary energy supply, no local air quality impacts are anticipated. Therefore, a detailed assessment of the impacts of combustion emissions from the energy plant has been screened out of this assessment.

The proposed ventilation strategy will utilise Air Handling Units (AHUs), equipped with particulate filtration, which will be located within the basement plant rooms. The intakes will be located at roof level for occupied rooms and ground level for basement and plant rooms. All AHU extracts will be located at the loading bay at ground level towards Brooke Street.

1.2 Application Site Description and Location.

The Application Site is located within London Borough of Camden (LBC) administrative area at the approximate National Grid Reference (NGR): X 531250 Y 181650. The Application Site is bound by Waterhouse Square and Brookes Market to the north with residential dwellings and leisure buildings thereafter; Vessage Court apartment block, retail, leisure and commercial buildings to the east; Holborn High Street to the south with Gresham College, retail and commercial buildings thereafter and Just Go Parking, office space, commercial buildings and the A5200 thereafter.

The Application Site is currently occupied by the 2 Warehouse Square building. Figure 1 illustrates the location of the Application Site.

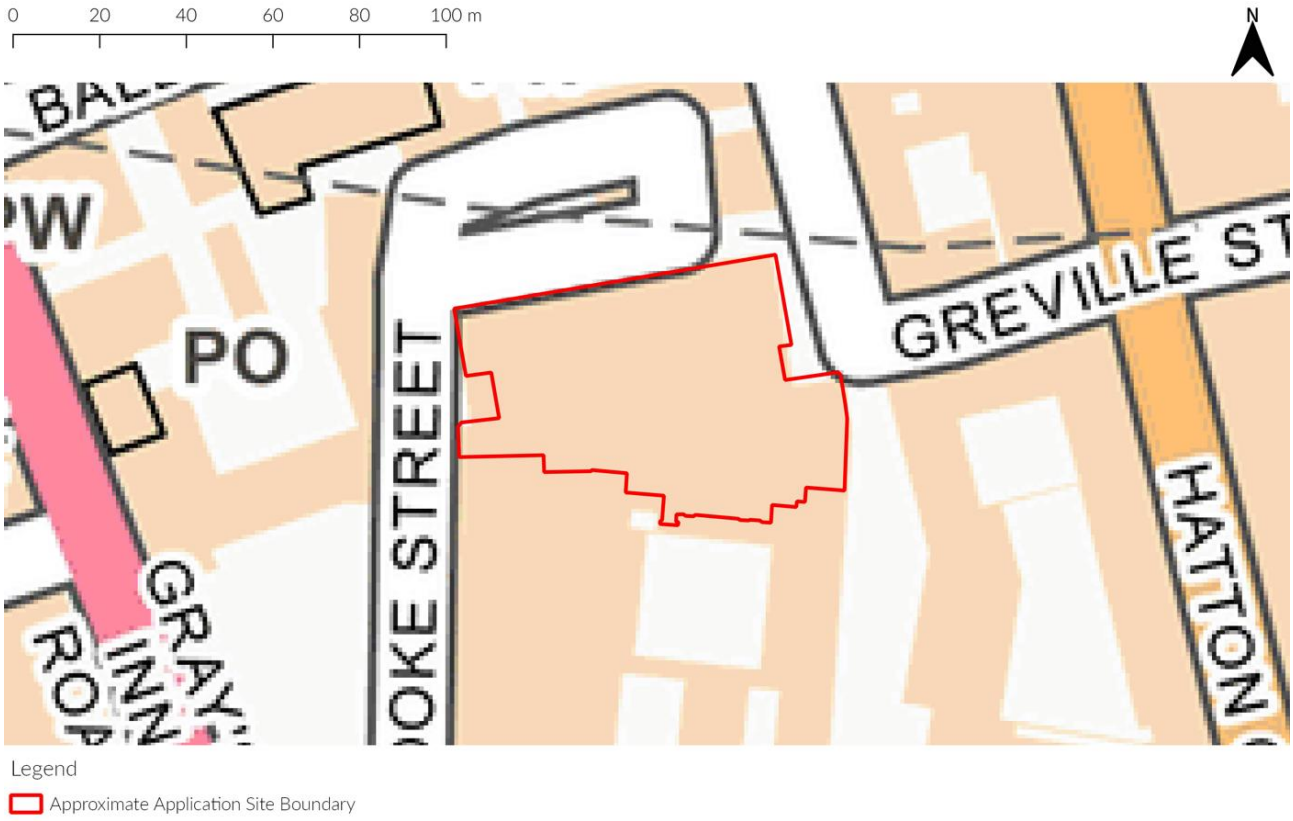


Figure 1: Approximate location of the Application Site. Contains OS Data © Crown Copyright and Database rights 2023.

1.3 Scope of Assessment.

A summary of the scope of the assessment includes:

- Review of relevant legislation, policy and guidance documents;
- Determination of baseline scenario, using LBC monitoring data and Department for Environmental, Food and Rural Affairs (Defra) predicted background concentrations;
- Assessment of potential air quality impacts during the construction phase;
- Assessment of potential air quality impacts during the operational phase;
- Assessment of air quality neutral;
- An assessment of the suitability of the Application Site for its proposed office use; and
- Identification of required mitigation measures.

2. Legislation, Policy and Guidance Documents.

2.1 Air Quality Strategy and Local Air Quality Management.

The Environment Act 1995 (Part IV)[1] requires the Secretary of State to publish an air quality strategy and local authorities to review and assess the quality of air within their boundaries. The latter has become known as Local Air Quality Management (LAQM).

The Air Quality Strategy[2] provides the policy framework for local air quality management and assessment in the UK. It sets out air quality standards and objectives for key air pollutants. These standards and objectives are designed to protect human health and the environment. The Strategy also sets out how the different sectors of industry, transport and local government, can contribute to achieving these Air Quality Objectives (AQOs).

Local authorities are required to identify whether the AQOs have been, or will be, achieved at relevant locations, by the applicable date. If the AQOs are not achieved, the authority must declare an Air Quality Management Area (AQMA) and should prepare an action plan within 12 months. An action plan must identify appropriate measures and policies that can be introduced in order to work towards achieving the AQO(s).

The AQOs set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The AQOs for use by local authorities are prescribed within the Air Quality (England) Regulations 2000[3], and the Air Quality (England) (Amendment) Regulations 2002[4].

The AQOs for Nitrogen Dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) are set out in Table 1. The AQOs for NO_2, PM_{10} and $PM_{2.5}$ were to have been achieved by 2005, 2004 and 2020 respectively and continue to apply in all future years thereafter. The Environment Act 2021[5] acts as the UK's new framework of environmental protection and came into force on 1st April 2022. With regard to air quality, the Environment Act establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation.

This was implemented through the Environmental Improvement Plan 2023[6] which outlines new $PM_{2.5}$ targets for future years. These are a long term target of 10 µg/m^3 by 2040 and an interim target of 12 µg/m^3 by 31st January 2028. These targets are expected to focus on reducing concentrations of, and exposure to, $PM_{2.5}$.Additionaly, a new National Air Quality Strategy[7] has been published in April 2023 which sets out a framework which should be followed by local authorities in England in suport of Defra's long term air quality goals, including new $PM_{2.5}$ targets.

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

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO_2)	1-hour Mean	200 µg/m^3 Not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
Fine Particles (PM_{10})	24-hour Mean	50 µg/m^3 Not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3
Fine Particles ($PM_{2.5}$) *	Annual Mean	20 µg/m^3
Notes: Measured gravimetrically *The time period in LLAQM.TG(19) states "Work towards reducing emissions/concentrations of fine particulate matter ($PM_{2.5}$)"		

The AQOs apply at locations where members of the public are likely to be regularly present and exposed over the averaging period of the AQO. Examples of where the annual mean AQOs should apply are provided in the London Local Air Quality Management Technical Guidance (LLAQM.TG(19))[8], and include: building facade of residential properties, schools, hospitals. The annual mean AQOs are not relevant for the building facade of offices or other places of work where members of the public do not have regular access, kerbsides or gardens.

The 24-hour AQO for PM_{10} is considered to apply at the same locations as the annual mean AQO, as well as in gardens of residential properties and at hotels.

The 1-hour AQO for NO_2 also applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations, pavements of busy shopping streets, carparks and bus stations which are not fully enclosed. The 1-hour AQO does not apply at kerbside sites where the public do not have regular access.

2.2 EU Limit Values.

The European Union has also set limit values for NO_2, PM_{10} and $PM_{2.5}$; these are legally binding and have been implemented into English legislation by The Air Quality Standards Regulations 2010[9] and The Air Quality Standards (Amendment) Regulations 2016[10].

The limit values for NO_2, PM_{10} and $PM_{2.5}$ are the same as the English objectives (given in Table 1), but applied from 2010 for NO_2, 2005 for PM_{10} and 2015 for $PM_{2.5}$. The limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway).

2.3 World Health Organisation Guideline values.

The World Health Organisation (WHO) has produced air quality guidelines[11] to offer global guidance on thresholds and limits for key air pollutants that pose health risks. The Greater London Authority (GLA) confirmed that the relevant WHO guidelines referred to in the London Plan are from 2005 and as such these have been provided below in Table 2 for NO_2, PM_{10} and $PM_{2.5}$ concentrations. The WHO published updated air quality guidelines in 2021[12], however these have not been adopted into policy at the current time.

Table 2: WHO guidelines for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Objective
NO_2	1-hour Mean	200 µg/m^3 Not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	Annual Mean	20 µg/m^3
$PM_{2.5}$ *	Annual Mean	10 µg/m^3

2.4 Statutory Nuisance Legislation.

Part III of the Environmental Protection Act (EPA) 1990 (as amended)[13] contains the main legislation on Statutory Nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance.

Fractions of dust greater than 10 µm (i.e. greater than PM_{10}) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK Air Quality Strategy. In legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

2.5 Clean Air Strategy.

The Clean Air Strategy (CAS)[14], published in 2019, sets out the Government's proposals aimed at delivering cleaner air in England, and also indicates how devolved administrations intend to make emissions reductions. It sets out the comprehensive action that is required from across all parts of government and society to deliver clean air.

2.6 Building Regulations

The Building Regulations help to ensure that new buildings, conversions, renovations and extensions (domestic or commercial) will be safe, healthy and high performing. Detailed regulations cover specific topics including structural integrity, fire protection, accessibility, energy performance, acoustic performance, protection against falls, electrical and gas safety. Approved Document Part F of the Building Regulations (2021)[15] provides guidance

for indoor air quality and the pollutant concentrations that must not be exceeded in both buildings for dwellings and non-dwellings.

2.7 Planning Policy.

2.7.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) 2021[16] sets out planning policy for England. It includes advice on when air quality should be a material consideration in development control decisions. Relevant sections are set out below:

> Paragraph 55: *"Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition."*
>
> Paragraph 174*: "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"*
>
> Paragraph 185: *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".*
>
> Paragraph 186: *"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."*
>
> Paragraph 188: *"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 NPPF is supported by Planning Practice Guidance (PPG)[17].

The PPG states that:

> Paragraph 001 (Reference ID: 32-001-20191101): *"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance relevant Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit or where the need for emissions reductions has been identified."*
>
> Paragraph 002 (Reference ID: 32-002-20191101): *"Plans may need to consider ways in which the development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable".*
>
> Paragraph 005 (Reference ID: 32-005-20191101): *"Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is*

likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and / or breach legal obligations (including those relating to the conversation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity."

The PPG also sets out the information that may be required in an air quality assessment, stating that:

Paragraph 007 (Reference ID: 32-007-20191101): *"Assessments need to be proportional to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific. The scope and content of supporting information is best discussed and agreed between the local planning authority and applicant before it is commissioned".*

It also provides guidance on options for mitigating air quality impacts, and makes clear that:

Paragraph 008 (Reference ID: 32-008-20191101): *"Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact."*

2.8 Local Policy.

2.8.1 The London Plan 2021

The London Plan 2021[18] is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20-25 years (covering the period 2019-2041) and the Mayor's vision for Good Growth. The Plan is part of the statutory development plan for London, meaning that the policies in the Plan should inform decisions on planning applications across the capital.

The London Plan 2021 is the third London Plan, the previous ones being the 2004 London Plan and the 2011 London Plan. All of the other iterations of the London Plan from 2004-2016 have been alterations. This London Plan replaces all previous versions.

The following policy relating to air quality is contained within The London Plan 2021[18]: Policy SI 1 'Improving air quality' states:

"*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."

The London Plan 2021 provides further information on Policy SI that requires consideration, as detailed below.

Section 9.1.2: *"The Mayor is committed to making air quality in London the best of any major world city, which means not only achieving compliance with legal limits for Nitrogen Dioxide as soon as possible and maintaining compliance where it is already achieved, but also achieving World Health Organisation targets for other pollutants such as Particulate Matter*."

Section 9.1.3: *"The aim of this policy is to ensure that new developments are designed and built, as far as is possible, to improve local air quality and reduce the extent to which the public are exposed to poor air quality. This means that new developments, as a minimum, must not cause new exceedances of legal air quality standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits. Where limit values are already met or are predicted to be met at the time of completion, new developments must endeavour to maintain the best ambient air quality compatible with sustainable development principles."*

Section 9.1.4: "*Where this policy refers to 'existing poor air quality' this should be taken to include areas where legal limits for any pollutant, or World Health Organisation targets for Particulate Matter, are already exceeded and areas where current pollution levels are within 5 per cent of these limits."*

Additionally, Policy GG3 'Creating a healthy city' states:

"To improve Londoners' health and reduce health inequalities, those involved in planning and development must:

[…]

F seek to improve London's air quality, reduce public exposure to poor air quality and minimise inequalities in levels of exposure to air pollution."

2.8.2 The London Environment Strategy

The London Environment Strategy (LES), published in May 2018[19], supersedes the previous Mayor's Air Quality Strategy (MAQS) for London, published in December 2010. The LES aims to reduce pollution concentrations in London to achieve compliance within the EU limit values as soon as possible. The LES commits to the continuation of measures identified in the 2002 and 2010 MAQS and sets out a series of additional measures.

Proposal 4.3.3.a states that the London Strategy provides policies in which all new large-scale developments can not only become 'Air Quality Positive', but also maintain Air Quality Neutral requirements for all other developments. Within the planning guidance for building operations and transport emissions, information about emission benchmarks for 'Air Quality Neutral' developments are set out. Any development that either meets or exceeds the benchmarks is considered air quality neutral as they avoid any increase in PM and NO_X emissions. In order for the benchmarks to remain relevant, the Mayor will continue to review them. To ensure that the requirements are met, execution of the air quality neutral policy will be monitored by utilising both the LLAQM and the London Plan monitoring report.

The following proposed policies relate to the planning process with regards to improving air quality:

Policy 4.2.2: "*Reduce emissions from non-road transport sources, including by phasing out fossil fuels;*"

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

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

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

Policy 4.3.1: "*The Mayor will establish new targets for $PM_{2.5}$ and other pollutants where needed. The Mayor will seek to meet these targets as soon as possible, working with government and other partners;*"

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*."

Furthermore, the LES outlines that negative consequences that can occur from developing air quality and climate policies in isolation, particularly with regards to energy and planning policy. Instead, integrated policy design can lead to benefits such as reducing carbon emissions by switching to zero emission vehicles simultaneously.

The LES also includes the focus on the 187 Air Quality Focus Areas (AQFA) declared by the GLA. Focus Areas are defined to address concerns raised by boroughs within the LAQM review process and forecasted air pollution trends. These are locations that not only exceed the EU annual mean limit value for NO_2 but are also locations with high human exposure. This is not an exhaustive list of London's hotspot locations, but where the GLA believe the problem to be most acute.

2.8.3 London Borough of Camden Local Plan 2017

The LBC's Local Plan[20] was adopted in 2017 and sets out the Council's planning policies and replaces the Core Strategy and Development Policies planning documents (adopted in 2010). It ensures that Camden continues to have robust, effective and up to-date planning policies that respond to changing circumstances and the borough's unique characteristics and contribute to delivering the Camden Plan and other local priorities. It will cover the period from 2016 to 2031.

A review of the plan indicated the following policies are relevant to this assessment:

"Policy CC2 Adapting to climate change

[…]

Sustainable design and construction measures

The Council will promote and measure sustainable design and construction by:

> *e. ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;*
>
> *f. encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;*
>
> *g. encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve "excellent" in BREEAM domestic refurbishment; and*
>
> *h. expecting non-domestic developments of 500 sqm of floorspace or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019."*

And:

"Policy CC4 Air Quality

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.

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.

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."

2.8.4 Local Air Quality Management in the London Borough of Camden

The whole of Camden has been declared an Air Quality Management Area (AQMA) due to exceedances in the annual mean NO_2 and the 24-hour mean PM_{10} AQOs. Air quality in Camden is particularly severe along major roads throughout the borough, and the south of the borough which are characterised by high road traffic[21]. Camden's Clean Air Action Plan[22] has been produced as part of LBC's duty to Local Air Quality Management. It outlines the actions that will be taken to improve air quality in Camden between 2019 and 2034. This document covers the period from the publication of the first Camden Clean Air Action Plan (2019-2022) after the Council adopted WHO air quality guidelines in January 2018 through to the 2034 deadline for complying with the revised WHO guidelines, which the Council adopted in March 2022.

It sets out LBC's long-term vision for improving air quality and protecting public health from the effects of air pollution whilst also tackling the disproportionate impact that poor air quality has on some groups.

The key priorities of the Clean Air Action Plan are:

- Reducing building emissions
- Reducing construction emissions
- Reducing transport emissions
- Supporting communities and schools
- Reducing emissions from delivery, servicing and freight
- Continuing public health and awareness raising
- Lobbying

A number of LBC plans and strategies support the Clean Air Action Plan:

- Camden 2025
- Our Camden Plan
- Green Action for Change 2010-2020
- Camden's Parking and Enforcement Plan
- Camden's Transport Strategy 2019-2041
- Joint Strategic Needs Assessment

While the Clean Air Strategy outlines strategic objectives for the borough in relation to addressing poor air quality, the Camden Clean Air Action Plan 2023-2026[22] reaffirms the priorities of the strategy and describes actions to achieve targeted objectives in the next four years. It also includes targets for indoor and occupational air quality.

2.9 Assessment Guidance and Standards.

The primary guidance documents consulted in undertaking this assessment are detailed below.

2.9.1 Mayor of London, London Local Air Quality Management Technical Guidance

The Mayor of London's LLAQM.TG(19)[8] was published for use by local authorities in their LAQM review and assessment work. The document provides key guidance in aspects or air quality assessment, including screening, use of monitoring data and use of background data that are applicable to all air quality assessments.

2.9.2 EPUK and IAQM 'Air Quality Guidance for Planning'

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have together published guidance (EPUK and IAQM planning guidance)[23] to help ensure that air quality is properly accounted for in the development control process. It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

2.9.3 GLA 'Construction and Demolition Dust Guidance'

Guidance on the assessment of dust from demolition and construction has been published by the GLA (GLA construction guidance) [24]. The guidance is based on the site evaluation process outlined in the IAQM Construction and Demolition Dust Guidance and provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities.

2.9.4 IAQM 'Construction and Demolition Dust Guidance'

Guidance on the assessment of dust from demolition and construction has been published by the IAQM (IAQM construction guidance)[25]. The guidance provides a methodology to determine the dust emission magnitude and provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities. This allows for the identification of appropriate mitigation measures that are defined further within the IAQM construction guidance.

2.9.5 Sustainable Design and Construction Supplementary Planning Guidance

The GLA published supplementary planning guidance (SPG) on sustainable design and construction in April 2014[26], in order to improve the environmental performance of new developments.

2.9.6 Air Quality Neutral London Plan Guidance

The Air Quality Neutral London Plan Guidance (AQN LPG)[27] was adopted in February 2023. This document sets out the benchmarks for transport and building emissions from new developments. These are based on research and evidence carried out by building and transport consultants. This ensures that new developments do not worsen air quality throughout London.

3. Methodology of Assessment.

3.1 Existing Air Quality in the Study Area.

A baseline air quality review was undertaken to determine the existing air quality in the vicinity of the Application Site.

This desk-top study was undertaken using the following sources:

- Air quality data for LBC including a review of the LBC[28] air quality reports and local monitoring data;
- The UK Pollutant Release and Transfer Register[29];
- Background pollution maps from Defra's Local Air Quality Management (LAQM) website[30];
- London Atmospheric Emissions Inventory (LAEI) modelled annual mean concentrations from the GLA[36]
- Pollution Inventory from the Environment Agency[31]
- The UK Ambient Air Quality Interactive Map[32];
- Ordnance Survey data and Aerial photography from Google Maps.

3.2 Construction Phase Impacts.

3.2.1 Construction Dust Assessment

The GLA construction guidance outlines that its approach or methodology for assessment is: *"based on the site evaluation process set out in the Institute of Air Quality Management's (IAQM) 2014 Guidance on the Assessment of dust from demolition and construction. This guidance is periodically updated and, therefore, the latest version of the IAQM Guidance should be used. "*

In recognition of this statement, the assessment of construction dust impacts outlined in this report has therefore been undertaken in line with the latest IAQM construction guidance, released in 2023[25]. Demolition activities are not required at the Application Site as the proposals are for refurbishment and extension of the existing building. Activities on the proposed construction site have been divided into three types to reflect their different potential impacts. These are:

- Earthworks;
- Construction; and
- Trackout

The risk of dust emissions was assessed for each activity with respect to:

- Potential loss of amenity due to dust soiling;
- The risk of health effects due to a significant increase in exposure to PM_{10}; and
- The risk of ecological impacts due to a significant increase in exposure to dust.

The first stage of the assessment involves screening to determine whether there are any sensitive receptors within the threshold distances defined by the GLA construction guidance. A detailed assessment of the impact of dust from construction sites will be required where:

- A 'human receptor' is located within 250 m of the boundary of the Application Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Application Site entrance;
- An 'ecological receptor' is located within 50 m of the boundary of the Application Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Application Site entrance.

The magnitude of dust emission for each activity is determined on the basis of the guidance, indicative thresholds, information available relating to the project and expert judgement. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the mitigation requirements.

Descriptors for magnitude of impact and impact significance used in this assessment of construction phase dust are given in the IAQM construction guidance available online.

3.2.2 Construction Traffic

3.2.2.1 Construction Traffic Emissions Screening

The screening assessment has been undertaken with reference to the following EPUK and IAQM planning guidance indicative criteria:

- a change of Light Duty Vehicle (LDV) flows of more than 100 (Annual Average Daily Traffic) AADT (within an AQMA); and/or
- a change of Heavy Duty Vehicle (HDV) flows of more than 25 AADT (within an AQMA).

3.2.2.2 NRMM Emissions Screening

Non-Road Mobile Machinery (NRMM) refers to mobile machines, transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads. NRMM emissions have been screened following IAQM construction guidance[25].

3.3 Operational Phase Impacts.

3.3.1 Road Traffic Impacts

The screening assessment has been undertaken following the EPUK and IAQM planning guidance indicative criteria, i.e.:

- a change of LDV flows of more than 100 AADT (within an AQMA); and/or
- a change of HDV flows of more than 25 AADT (within an AQMA).

Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that "*the criteria provided are precautionary and should be treated as indicative*", and "*it may be appropriate to amend them on the basis of professional judgement*".

Where impacts can be screened out there is no need to progress to a more detailed assessment.

3.3.2 Site Suitability Assessment

A qualitative Site Suitability Assessment has been undertaken to consider the exposure of future occupants of the Proposed Development to existing air quality. The assessment of Site Suitability will be assessed qualitatively using monitoring data within the vicinity of the Application Site, from the latest LBC ASR[28] in combination with Defra predicted background concentrations.

As the Proposed Development is for flexible office use, the 1-hour mean NO_2 AQO applies. Additionally, though not required for planning, the Approved Document Part F of Building Regulations (2021)[15] states that the annual mean NO_2 AQO also applies at non-dwelling sites. Therefore, the annual mean NO_2 will also be considered.

3.3.3 Air Quality Neutral Assessment

To enable the implementation of the air quality neutral policy of the London Plan, emissions benchmarks have been developed for buildings and transport, the latter of which are dependent on the zone in London where the Proposed Development is located. Developers are required to calculate emissions due to buildings operations and transport, and to compare these emissions to the benchmarks set out in the AQN LPG.

Where the Proposed Development's emissions exceed the benchmarks, on-site mitigation is required. Where emissions continue to exceed the benchmarks after appropriate on-site mitigation, the excess emissions need to be off-set through agreement with the local planning authority.

3.4 Assessment of Significance.

3.4.1 Construction Dust

The IAQM construction guidance on the assessment of dust from demolition and construction states that the primary aim of the risk assessment is to identify site specific mitigation that, once implemented, should ensure that there will be no significant effect. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

The determination of which mitigation measures are recommended include elements of professional judgement and the professional experience of the consultants preparing this report is set out in Appendix 1.

3.4.2 Operational Impacts

The EPUK and IAQM planning guidance has been used to assess the potential for significant impacts as a result of vehicle emissions from traffic associated with the Proposed Development. The focus of the guidance is to assess traffic emission impacts and advises on how to describe the air quality impacts and their significance.

3.4.3 Site Suitability Assessment

To determine the significance of predicted air quality impacts based upon a Site Suitability Assessment, the EPUK and IAQM planning guidance states:

"Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means."

Only the short-term AQOs apply for office building and lab spaces. However, the long-term NO_2 AQO has also been considered for the flexible office and lab spaces in order to predict compliance with Approved Document Part F of the Buildings Regulations (2021)[15].

Additionally, as stated in the London Plan 2021:

"The Mayor is committed to making air quality in London the best of any major world city, which means not only achieving compliance with legal limits for Nitrogen Dioxide as soon as possible and maintaining compliance where it is already achieved, but also achieving World Health Organisation targets for other pollutants such as Particulate Matter".

As such, pollutants will also be assessed against WHO guidelines when determining the suitability of the Application Site for its proposed use.

It should be noted that, based on recent advice from the GLA, mitigation measures against particulate matter concentrations are not recommended for the sole purpose of meeting the WHO guidelines. This is due to the energy penalties associated with the installation, operation, and maintenance of this filtration which, in the absence of any other objectives exceedances, is not considered to be appropriate. Particulate matter concentrations exceed WHO guidelines across London and regional measures to reduce concentrations (being principally delivered by the GLA) are considered more appropriate than mitigation at individual developments.

4. Baseline Environment.

This section sets out the available information on air quality in the vicinity of the Application Site.

4.1 Local Air Quality Management Review and Assessment.

The Application Site is located within the borough-wide Camden AQMA, with was declared in 2002 after there were found to be exceedances of the annual mean NO_2 AQO and the 24-hour mean PM_{10} AQO. The exceedances are partly due to road transport emissions.

It should be noted that pollutant concentrations recorded in 2020 and 2021 from the most recent LBC ASR are lower than previous years as a direct result of reduced traffic levels during the COVID-19 pandemic. As such the pollutant concentrations recorded in 2020 and 2021 are not considered to be representative of 'normal' air quality conditions. 2022 monitoring data is available for use as the latest year of representative monitoring data. Therefore, 2022 has been considered as the baseline year within this assessment.

4.2 Local Air Quality Monitoring.

The UK Automatic Urban and Rural Network (AURN) is a countrywide network of air quality monitoring stations operated on behalf of Defra. Monitoring data for AURN sites is available from the UK Air Information Resource website (UK AIR). LBC operates two, with one near to the Application Site, London Bloomsbury (BL0), located approximately 1.1 km northeast of the Application Site. London Bloomsbury AURN is classified as urban background and monitors NO_2, PM_{10}, and $PM_{2.5}$ and monitoring data for AURN, from 2015 to 2022, is detailed in Table 3.

Recent monitoring data for the automatic monitoring stations is detailed in Table 3 and a visual representation of the locations of the automatic monitoring stations is shown in Figure 2.

Table 3: Automatic Monitoring Locations

Monitoring site and distance (km) from site boundary (approx.)	Objective	2016	2017	2018	2019	2020	2021	2022
NO_2								
London Bloomsbury AURN (BL0) (1.1 km)	Annual mean (µg/m^3)	**42**	38	36	32	28	27	26
	Number of hours with concentrations >200 µg/m^3	0	0	0	0	0	0	0
PM_{10}								
London Bloomsbury AURN (BL0) (1.1 km)	Annual mean (µg/m^3)	20	19	17	18	16	16	17
	Number of days with concentrations > 50 µg/m^3	9	6	1	9	4	0	5
$PM_{2.5}$								
London Bloomsbury AURN (BL0) (1.1 km)	Annual mean (µg/m^3)	12	13	10	11	9	9	9
Notes: Concentrations in **bold** indicate an exceedance of the relevant AQO Concentrations in the ASR rounded to nearest whole number								

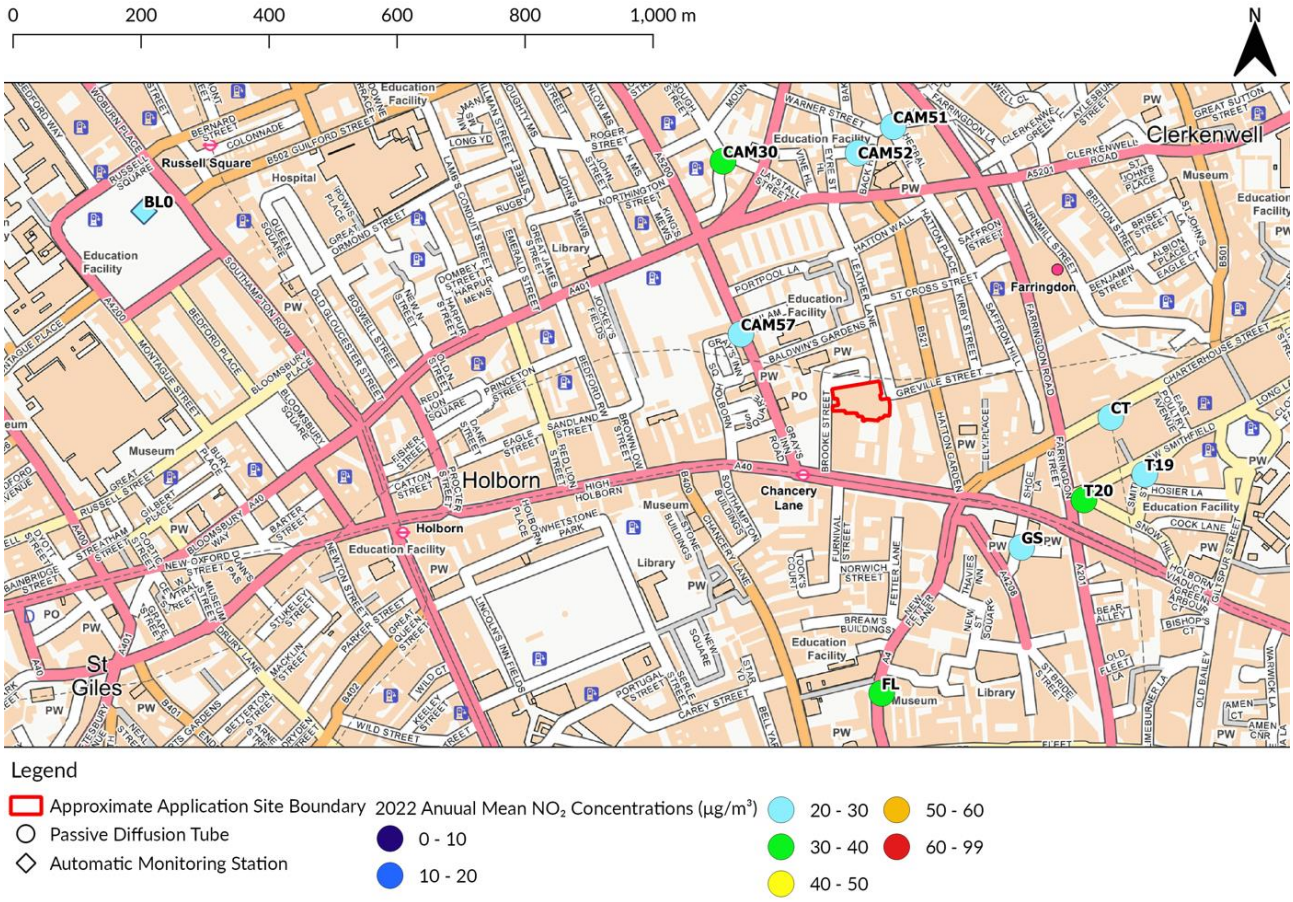


Figure 2: Monitoring Locations within the vicinity of the Application Site. Contains OS Data © Crown Copyright and Database rights 2023.

The monitoring results from London Bloomsbury AURN indicate compliance with the annual mean AQOs and the WHO guidelines for NO_2, PM_{10}, $PM_{2.5}$ in the reporting year of 2022. The monitored 1-hour mean NO_2 and 24-hour mean PM_{10} concentrations indicate compliance with their respective AQOs and WHO guidelines in the baseline year of 2022.

LBC operates 309 passive diffusion tubes to monitor NO_2 concentrations. A review of the most recent monitoring data available indicated that there are nine passive diffusion tube monitoring locations within the vicinity of the Application Site. Five of these passive diffusion tubes are located within the City of London (CoL) administrative area.

Table 4 details the monitoring results for nine passive diffusion tube monitoring locations within 400 m of the Application Site for the most recent years available, from 2018 to 2022, and their locations are illustrated in Figure 2.

Table 4: Passive Diffusion Tube Monitoring Results

Site ID	Site Type	Local Authority	Distance (m) from site (approx.)	Annual Mean NO_2 Concentration (µg/m³)				
				2018	2019	2020	2021	2022
CAM57	Roadside	LBC	160	n/a	n/a	27	27	29
GS	Roadside	CoL	240	n/a	n/a	24	25	26
T20	Kerbside	CoL	300	58	51	35	30	35

Site ID	Site Type	Local Authority	Distance (m) from site (approx.)	Annual Mean NO_2 Concentration (µg/m^3)				
				2018	2019	2020	2021	2022
FL	Roadside	CoL	340	56	44	29	30	31
CT	Roadside	CoL	340	n/a	n/a	30	30	30
CAM52	Roadside	LBC	350	37	32	23	22	23
CAM30	Roadside	LBC	380	n/a	n/a	n/a	33	33
CAM51	Roadside	LBC	390	39	33	22	23	22
T19	Kerbside	CoL	400	51	38	28	26	27
Notes: n/a: data not available as passive diffusion tubes were not commissioned								

As shown in Table 4, there have been no exceedances of the annual mean NO_2 AQO and the WHO guideline, in the vicinity of the Application Site, in the baseline year of 2022. There were, however, exceedances of the annual mean NO_2 AQO and WHO guideline reported in 2018 and 2019 at passive diffusion tubes T20, FL and T19. The closest passive diffusion location to the Application Site, CAM57, recorded an annual mean concentration of NO_2 in 2022, of 29.5 µg/m^3 which is 73.9% of the annual mean NO_2 AQO and WHO guideline.

An annual mean concentration of 60 µg/m^3 or above is used to indicate a possible exceedance of the 1-hour mean NO_2 AQO and WHO guideline. In the last five years of representative monitoring data, none of the passive diffusion tube locations, within 400 m of the Application Site, have recorded an exceedance of 60 µg/m^3 and therefore, no exceedance of the 1-hour mean NO_2 AQO and the WHO guideline is expected.

4.3 Industrial Pollution.

A desk-based review of potential industrial sources using the UK Pollutant Release and Transfer Register[29] and the Pollution Inventory from the Environment Agency[31] identified two industrial or waste management sources of air pollution within 2 km of the Application Site since 2015. However, none of these sources have significant emissions to air, as shown in Table 5, hence are not likely to impact air quality at the Application Site.

Table 5: Industrial/Waste Management Sources of Air Pollution within 2 km of the Application Site.

Source Name	Source Type	Air Pollutant Release	Distance (km)
Walbrook Wharf	Disposal of non-hazardous waste	No pollutant release reported	0.7
The Francis Crick Institute	Thermal power plants and combustion installations (50MW or greater)	Emissions to air of relevant pollutants are controlled under an environmental permit and as such are not expected to be significant.	1.7

4.4 Defra Predicted Concentrations.

The background concentrations have been obtained from the national maps published by Defra. These estimated concentrations are produced on a 1 km by 1 km grid basis for the whole of the UK. The Application Site falls into grid square X 531500 Y 181500 and the predicted concentrations for this grid square for NO_2, PM_{10} and $PM_{2.5}$ are provided in Table 6 for 2022, the most recent year with available monitoring data, 2023, the current year and for 2027, the earliest anticipated opening year for the Proposed Development.

Table 6: Predicted Background Concentrations for grid square **X 531500 Y 181500**

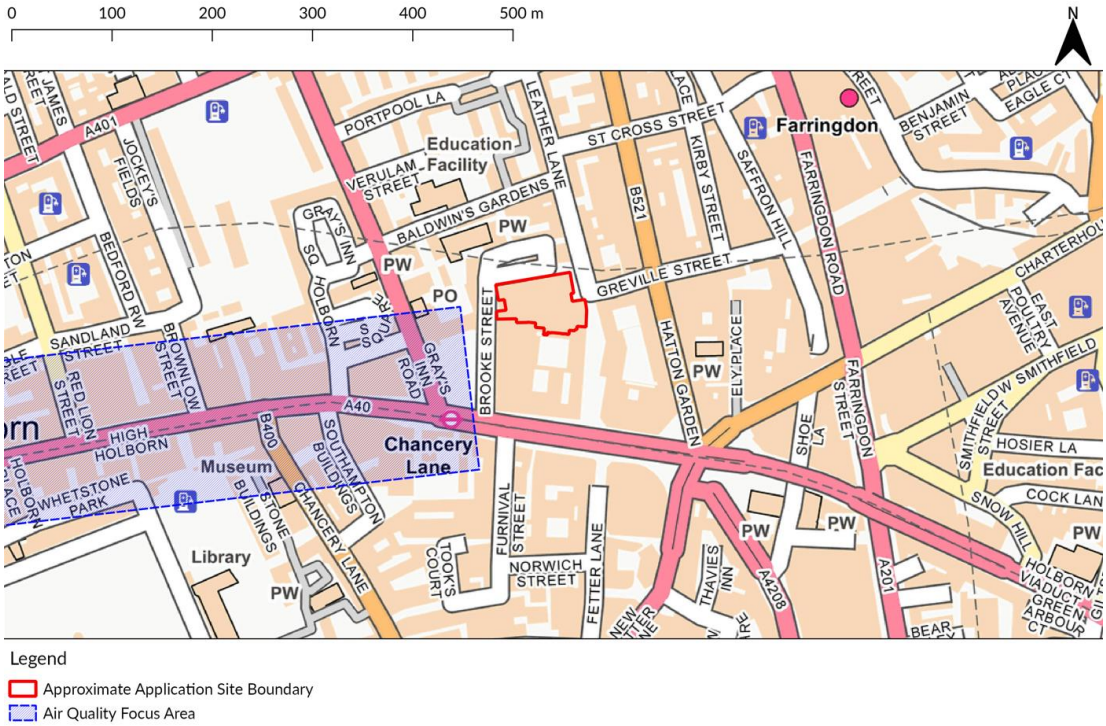
Year	Predicted Background Concentration (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
2022	39.8	18.6	12.0
2023	39.1	18.4	11.9
2027	37.4	18.0	11.6
Notes: Concentration rounded to 1 decimal place.			

As shown in Table 6, background concentrations are below the relevant AQOs for all pollutants. There are no exceedances of the WHO guideline for NO_2 and PM_{10} in all years. However, there are exceedances of the WHO guideline for $PM_{2.5}$ in all years.

4.5 Greater London Authority

4.5.1 Air Quality Focus Areas

Air Quality Focus Areas (AQFAs)[33] are locations that not only exceed the annual mean limit value for NO_2 but are also locations with high human exposure. As shown in Figure 3 the Application Site is located 25 m east of the Holborn High Street and Southampton Row Junction AQFA.



Legend
Approximate Application Site Boundary
Air Quality Focus Area

Figure 3: Air Quality Focus Areas in the vicinity of the Application Site. Contains OS Data © Crown Copyright and Database rights 2023.

4.5.2 LAEI pollution Maps

The GLA produce LAEI annual mean concentration maps for the whole of London on a 20 m by 20 m grid for a historic year 2019[34]. The annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations in the immediate area of the Application Site are illustrated in Figure 4, Figure 5 and Figure 6 for 2025.

Figure 4: Modelled 2025 annual mean concentrations of NO_2 (GLA 2019). Contains OS Data © Crown Copyright and Database rights 2023.

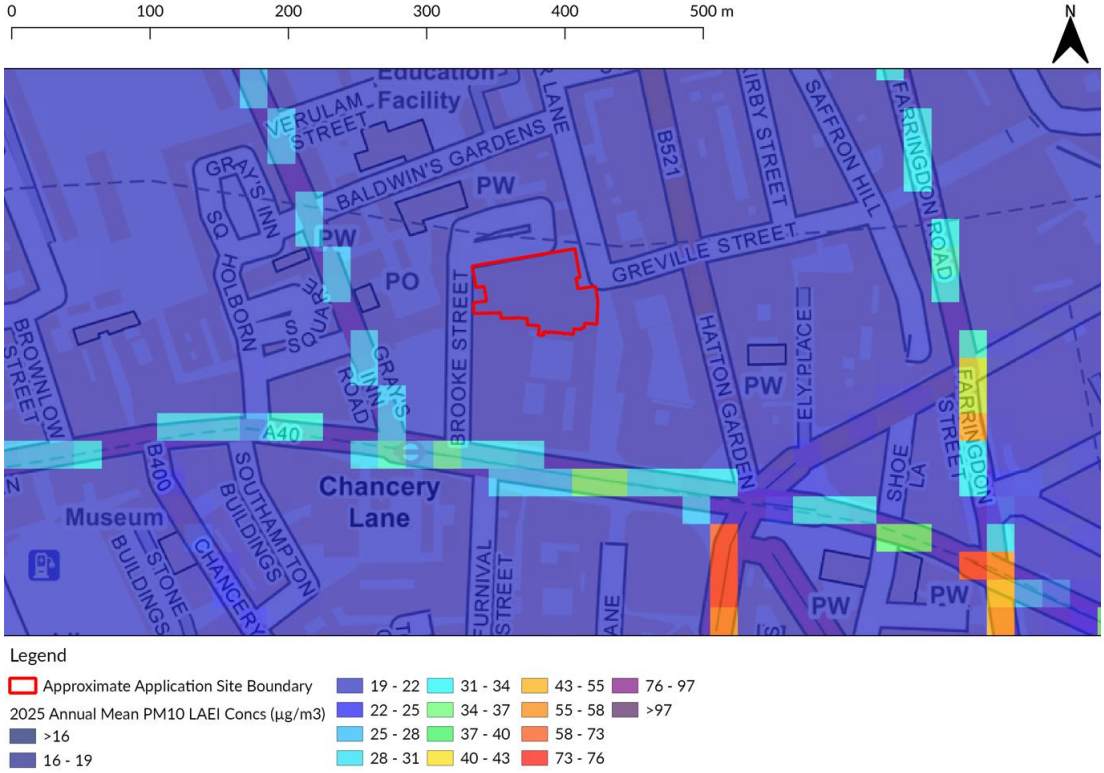


Figure 5: Modelled 2025 annual mean concentrations of PM_{10} (GLA 2019). Contains OS Data © Crown Copyright and Database rights 2023.

Figure 6: Modelled 2025 annual mean concentrations of $PM_{2.5}$ (GLA 2019). Contains OS Data © Crown Copyright and Database rights. Contains OS Data.

The worst-case concentrations of key pollutants in 2025 are shown in Table 7 for the Application Site. These concentrations have been taken from the western side of the Application Site boundary which bounds Brooke Street.

Table 7: Annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ taken from the LAEI annual mean concentration maps

Year	Pollutant Concentration (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
2025	27.8	19.0	11.7
Notes: Concentrations rounded to 1 decimal place			

As illustrated in Figure 4, Figure 5, and Figure 6, LAEI mapping shows that the main source of pollution in the vicinity of the Application Site is the local road network. Predicted concentration of NO_2 for 2025 at the western site of the Application Site boundary is below the respective annual mean AQO and WHO guideline.

The predicted concentration of PM_{10}, for 2025, is also below the respective annual mean AQO and WHO guideline. For $PM_{2.5}$, the predicted LAEI annual mean concentration for 2025 is below the respective annual mean AQO, however it is in exceedance of the respective WHO guideline.

4.6 Summary of Background Data.

The Application Site is located within the LBC's AQMA.

In the baseline year of 2022 at the Bloomsbury AURN, there were no exceedances of the annual mean or 1-hour mean NO_2 AQOs or WHO guidelines for NO_2. There were no exceedances of the annual mean or 24-hour mean AQOs or WHO guidelines for PM_{10}. There were no exceedances of the annual mean AQOs or WHO guidelines for $PM_{2.5}$.

There were no exceedances of the annual mean NO_2 AQO or the WHO guidelines measured by passive diffusion tube locations in the baseline year of 2022 within 400 m of the Application Site.

There are no industrial or waste management sources of air pollution that are likely to affect the Application Site with regard to air quality.

Defra background concentrations for pollutants NO_2 and PM_{10} are below the relevant AQOs and WHO guideline in 2022, the baseline year, the current year of 2023, and 2027 the anticipated opening year for the Proposed Development. Defra background concentrations for $PM_{2.5}$ did not exceed the annual mean AQO however, it did exceed the WHO guideline in all three years.

The worst-case LAEI results taken from western side of the Application Site boundary show that the 2025 modelled annual mean concentrations of NO_2 and PM_{10} do not exceed the annual mean AQO and respective WHO guideline. For $PM_{2.5}$, while the worst-case LAEI modelled data indicate no exceedance of the respective annual mean AQO, there is exceedance of the respective WHO guideline.

5. Construction Phase Assessment.

The potential for air quality impacts during the construction of the Proposed Development are assessed in this section.

5.1 Construction Phase Dust Assessment.

The risk of dust impacts is based on the potential dust emissions magnitude and the sensitivity of the area. These two factors are then combined to determine the risk of dust impacts with no mitigation applied. In the absence of any site-specific information, a higher risk category has been applied to represent a worst-case scenario.

5.1.1 Assessment Screening

There are 'human receptors' within 250 m of the Application Site but no designated habitat sites within 50 m of the Application Site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Application Site entrance. Therefore, an assessment of construction dust at human receptors is required.

The closest ecological receptor to the Application Site is Camley Street Nature Park, classified as a Local Nature Reserve (LNR), located 2 km to the north west, and as such an assessment of construction at ecological receptors can be screened out from this assessment.

5.1.2 Potential Dust Emission Magnitude

The potential magnitude of dust emissions from demolition, earthworks, construction and trackout have been assessed, as identified in Table 8. As outlined in section 3.2.1, demolition is not required and as such, hasn't been included within this assessment.

Table 8: Predicted Magnitude of Dust Emissions

Activity	Magnitude	Justification
Earthworks	Small	Due to the nature of refurbishment and extension of the Proposed Development, earthworks activities are expected to be minimal. The Proposed Development has aspirations to re-use as much of the building existing fabric as possible. Moreover, the soil type at the Application Site was reviewed using the Application Soilscape[35] which classified the soil type as 'Loamy' which can be a potentially dusty soil type. The Application Site is generally flat. The total site area for earthworks is estimated to be approximately <18,000 m^2 which classifies the dust emission magnitude as small. As such, the dust emission magnitude with regards to earthworks has been classed as small.
Construction	Small	The volume of construction is estimated to be <12,000 m^3. The construction materials are expected to involve bricks, concrete and steel. It is likely there will be no foundation works as the building is being extended vertically. Despite the use of potentially dusty materials, the volume of construction means that the dust emission magnitude of construction has been classified as small.
Trackout	Small	Outward trips of HDVs during the construction phase were not available at the time of writing this report. A desk-based review of the Application Site using QGIS, satellite imagery shows the potential for unpaved roads in the Application Site <50 m. Additionally, the soil type analysed using the Soilscape[35] application classified the soil as 'Loamy' which is a potentially dusty soil type. The unpaved roads and soil type therefore result in the dust magnitude regarding trackout to be classed as small.
*Drawing number: 07099 Proposed Floor Plan (Revision P07), 23/05/2023 – Orms		

5.1.3 Sensitivity of the Study Area

The sensitivity of the area takes into account the following factors:

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

Figure 7 illustrates the distance band criteria (sensitivity buffers) from the Application Site boundary.

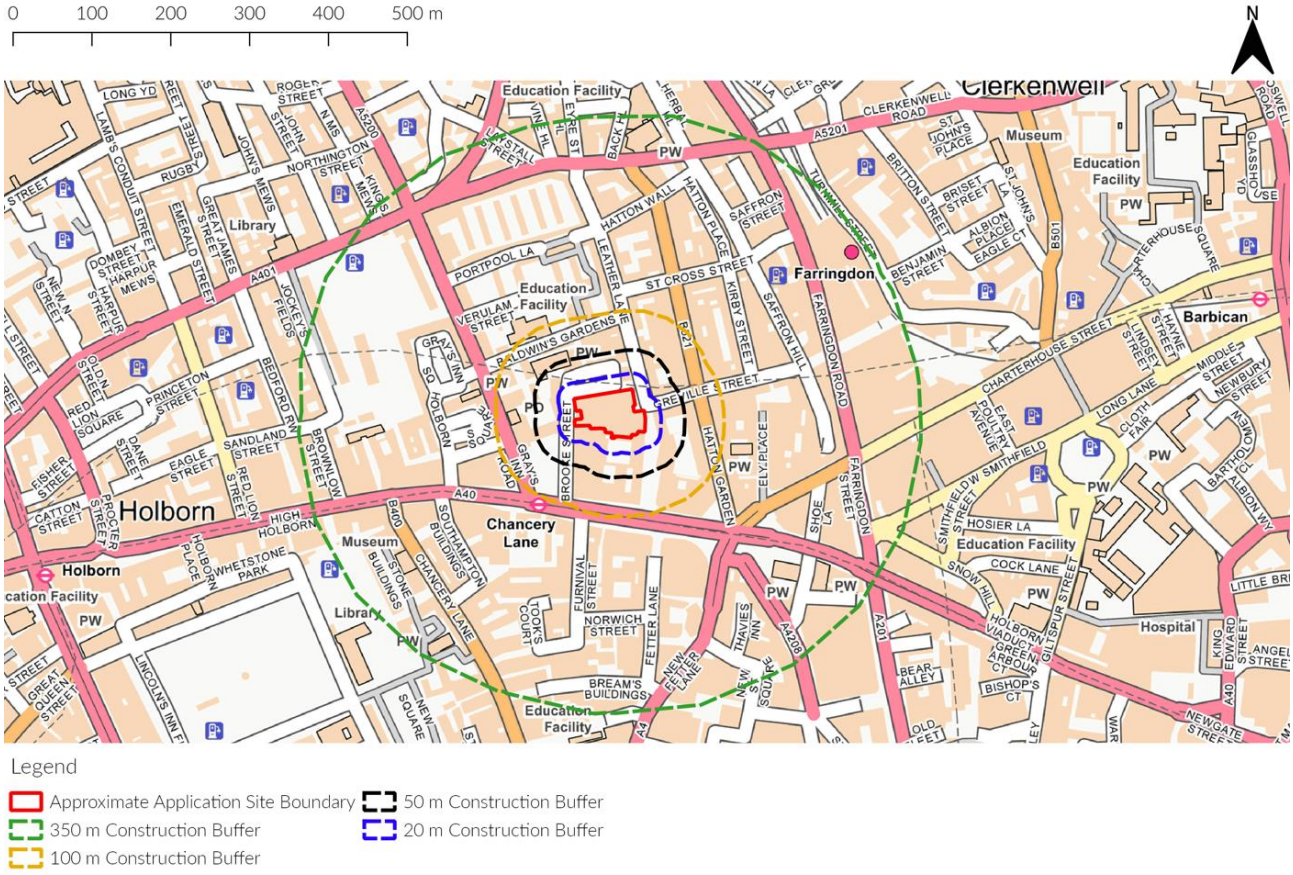


Figure 7: Demolition and Construction Dust Distance band criteria from the Application Site boundary. Contains Ordnance Survey Data © Crown Copyright 2023.

The sensitivity of the area and the factors considered are detailed in Table 9.

Table 9: Sensitivity of the Area

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site Activity	Trackout
Dust Soiling	As shown in Figure 7, there are between 10-100 high sensitivity receptors within 20 m of the Application Site boundary which includes apartment blocks. There are a further 1-10 medium sensitivity receptors, within 20 m of the Application Site boundary including co-working spaces. Other receptors up to 50 m, 100 m and 350 m will also	High	Low

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site Activity	Trackout
	be considered within this assessment. Therefore, the sensitivity of the area surrounding the Application Site has been classified as high sensitivity with regards to dust soiling for on-site activity. For trackout, the distances are measured from the side of the roads used by construction traffic. There are 1-10 medium sensitivity receptors within 20 m of roads up to 50 m of the anticipated routes used by construction traffic for small magnitude sites. Therefore, the sensitivity of the area surrounding the Application Site has been classified as low with respect to dust soiling for trackout		
Human Health	As per above, within 20 m of the Application Site boundary which includes apartment blocks. There are a further 1-10 medium sensitivity receptors, within 20 m of the Application Site boundary including leisure buildings. Other receptors up to 50 m, 100 m and 350 m will also be considered within this assessment. Using Defra predicted background concentrations as a representative but worst-case scenario, the PM_{10} concentration is 18.6 $\mu g/m^3$. As the PM_{10} is below 24 $\mu g/m^3$, the sensitivity of the area to human health impacts is therefore considered low in line with the IAQM guidance. For trackout, the distances are measured from the side of the roads used by construction traffic. There are 1-10 medium sensitivity receptors within 20 m of roads up to 50 m of the anticipated routes used by construction traffic for small magnitude sites. Considering the modelled LAEI concentration for 2019 is 18.6 $\mu g/m^3$, the sensitivity of the area surrounding the Application Site is classified as low with respect to human health for trackout.	Low	Low

5.1.4 Risk of Dust Impacts

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table 10 details the risk of dust impacts for demolition, earthworks, construction and trackout activities.

Table 10: Summary of Potential Unmitigated Dust Risks

Potential Impact	Sensitivity		Earthworks	Construction	Trackout
	On-site	Trackout			
Magnitude			Small	Small	Small
Dust Soiling Impacts	High	Low	Low Risk	Low Risk	Negligible
Human Health Impacts	Low	Low	Negligible	Negligible	Negligible

5.2 Construction Phase – Vehicular Pollutants.

The Application Site is located within the Camden AQMA and therefore the lower screening criteria (i.e. 100 LDV and 25 HDV) would applies.

Information on traffic movements anticipated during construction works was unavailable for the completion of the Air Quality Assessment. However, the development quantum is not anticipated to result in a significant

increase in movements above the threshold outlined in the EPUK and IAQM planning guidance. The duration of movements will be short-term in nature and are not considered further within the context of this assessment. Therefore, in accordance with the criteria presented within EPUK and IAQM planning guidance, additional road vehicle trips during the construction phase of the Proposed Development "*can be considered to have insignificant effects*" on air quality.

5.3 Construction Phase – Non-road Mobile Machinery.

Pollutants emitted by NRMM that may have the most significant potential effects on local air quality are particulate matter (PM_{10} and $PM_{2.5}$), and NO_x/NO_2. Typically, NRMM is associated with construction sites and, therefore there is a potential for NRMM emissions to adversely affect local air quality as a result of the Proposed Development.

The London Environment Strategy states that "*Emissions from NRMM construction and maintenance activities will, where appropriate, meet or exceed the standards set out by the NRMM Low Emission Zone*" and, as such, emissions from NRMM will be controlled at the Application Site.

Furthermore, IAQM construction guidance states that, with the application of suitable control measures and site management, exhaust emissions from on-site NRMM are "*unlikely to make a significant impact on local air quality. In the vast majority of cases, they will not need to be quantitatively assessed*".

6. Operational Phase Assessment.

The potential for air quality impacts during the operation of the Proposed Development are assessed in this section.

6.1 Road Traffic Emissions Screening Assessment.

Road traffic data associated with the Proposed Development has been provided by Velocity Transport Planning, the appointed Transport Consultants for the project. The Proposed Development is a car-free development and traffic generated by the Proposed Development will be for deliveries and servicing purposes only.

The initial flows indicate that there will be a total 24-hour AADT increase of 25 vehicles movements to the Application Site. As provided by Velocity, these would be split into 22 LDV AADT trips and 3 HDV AADT trips. This is below the indicative criteria in the EPUK and IAQM planning guidance of a change of more than 100 AADT LDVs and 25 AADT HDVs, for developments within an AQMA, and therefore no further assessment is required.

In accordance with the EPUK and IAQM planning guidance, the impacts on air quality from operational phase traffic generation are considered to be not significant.

6.2 Site Suitability Assessment.

This section presents a review of LBC monitoring data and mapped concentrations by Defra in the vicinity of the Application Site, for the purpose of identifying the suitability of the Application Site for flexible office use and to identify any requirements for potential mitigation to be embedded into the Proposed Developments design.

As presented in Section 2 in line with LLAQM.TG.(19)[8], 1-hour mean NO_2 AQOs apply to the Proposed Development due to its proposed office use. Moreover, Approved Document Part F of the Building Regulation (2021)[15] also applies at the Proposed Development, though not required for planning. As such, this section considers the annual mean and the 1-hour mean NO_2 concentrations and annul mean PM_{10} and $PM_{2.5}$ concentrations at the Application Site.

6.2.1 NO_2 Concentrations

A review of the annual mean and 1-hour mean NO_2 concentrations monitored within the vicinity of the Application Site has been completed as part of the baseline review with recent monitoring results, presented in Table 3 and Table 4.

The Proposed Development will have AHU air intakes located on the roof level, approximately 50 m above ground, which increases the distance from these air intakes from external sources of pollution such as nearby roads (Brooke Street). This is likely to reduce pollutant concentrations at roof level closer to background levels compared to ground level pollutant concentrations. The urban background monitoring station, London Bloomsbury AURN (BL0), is likely to best represent the concentrations at roof level of the Application Site. In 2022, BL0 recorded and annual mean NO_2 concentration of 26 $\mu g/m^3$ which is 65% of the AQO and WHO guideline.

The closest passive diffusion tube to the Application Site, CAM57, is located 2 m from the closest A road (Greys Inn Road – A5200) whilst the Application Site is located approximately 85 m from the nearest main road (A40). Due to the high traffic on the A5200 and CAM57 being located closer to the nearest A road than the Application Site, CAM57 is likely to record concentrations higher than at the Application Site. There were no exceedances of the annual mean NO_2 AQO recorded at CAM57, in 2022, and it is therefore anticipated that there would be no exceedances at the Application Site.

As outlined in LLAQM.TG(19)[8], an annual mean NO_2 concentration of 60 $\mu g/m^3$ or above is often used to indicate a possible exceedance of the 1-hour mean NO_2 AQO, therefore 60 $\mu g/m^3$ has been used as an Air Quality Assessment Level (AQAL) for the 1-hour mean NO_2 AQO. Nearby monitoring locations have not recorded exceedances of the 1-hour mean NO_2 AQO as such as it is not expected exceedances of the 1-hour mean NO_2 AQO at the Application Site.

Defra predicted background annual mean NO_2 concentration at the Application Site is 39.8 µg/m^3 in the baseline year of 2022. As such, the local air quality at the Proposed Development is considered to be compliant with the annual mean and 1-hour mean NO_2 AQO and WHO guideline. It is important to note that these predicted concentrations are based on monitored data from the year 2018 and factored forward and are not likely to be as up to date when compared to the monitored data at BL0 in 2022. Notwithstanding this, the Defra predicted concentrations in 2022 are below relevant AQOs.

Following the guidance from the Approved Document Part F of the Building Regulations (2021)[15], assessment of the local air quality at non-dwelling developments is required to comply with the annual mean NO_2 AQO. As noted earlier, the air intakes are proposed to be located at roof level which increases the distance from the nearby road sources, and therefore reduces the influence of road traffic emissions.

Therefore, NO_2 concentrations at the Application Site are considered to comply with the annual mean and 1-hour mean AQO and the Application Site is considered suitable for office use without the inclusion of mitigation.

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

A review of the annual mean PM_{10} and $PM_{2.5}$ concentrations monitored in the vicinity of the Application Site has been completed as part of the baseline review with recent monitoring results, presented in Table 3.

Recorded annual mean PM_{10} concentrations at BL0 have not exceeded the annual mean PM_{10} AQO or WHO guideline in 2022. Predicted Defra background mapped concentrations for PM_{10} in 2022 and 2025 LAEI modelled PM_{10} concentration, at the western side of the Application Site boundary, where concentrations are anticipated to be the highest, are also below the respective AQO and the WHO guideline.

Potential exceedances of the 24-hour mean PM_{10} AQO have been estimated following the methodology outlined in LLAQM.TG(19)[8]. This indicated that no exceedances are anticipated in 2022 and therefore it is expected that there will be no exceedances in 2023 or in future years.

Annual mean $PM_{2.5}$ concentrations at BL0 were below the respective AQO and WHO guideline in 2022. Predicted Defra background mapped concentrations for $PM_{2.5}$ in 2022 and LAEI modelled $PM_{2.5}$ concentration, at the western side of the Application Site boundary, are also below the respective AQO. However, the WHO guideline for $PM_{2.5}$ was in exceedance.

It is important to note that, based on recent advice from the GLA, mitigation measures against particulate matter concentrations are not recommended for the sole purpose of meeting the WHO guidelines. As such, the Application Site is considered suitable for the office use. Nevertheless, particulate filtration is proposed as part of the scheme design.

6.2.3 Significance of Air Quality Impacts

To determine the significance of predicted air quality impacts based upon a site-suitability assessment, such as that undertaken as part of this assessment, the EPUK and IAQM planning guidance states:

"*Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means.*"

With regards to the Proposed Development, the unmitigated impact significance associated with the Proposed Development has been predicted in accordance with the stated assessment methodology. The following factors have been considered when providing justification:

- The Proposed Development will not introduce any new receptor into an area of exceedance of the annual or 1-hour mean NO_2 AQOs, WHO guidelines based upon a review of NO_2 monitoring data, and Defra predicted background concentrations within the development locale.
- The Proposed Development will not introduce new receptors into an area of exceedance of the annual mean or 24-hour PM_{10} AQOs or the annual mean $PM_{2.5}$ AQO and Defra predicted background concentrations within the development locale. However, the WHO guideline for $PM_{2.5}$ pollutants is in exceedance in 2022 and at the western side of the Application Site boundary in 2025.

Based on the current ventilation strategy, which proposes particulate filtration as part of the design, additional mitigation measures for the operational phase of the Proposed Development are not required.

As no exceedances of the considered AQOs are predicted at air intake locations, mitigation measures are not required during the operational phase of the Proposed Development. As such, the overall effect is considered to be 'not significant'. Furthermore, based on recent advice from the GLA, mitigation measures against particulate matter concentrations are not recommended for the sole purpose of meeting the WHO guidelines.

6.3 Air Quality Neutral Assessment.

6.3.1 Building Emissions

The Proposed Development will be all-electric utilising zero emission technologies for the primary energy supply, with standby generators being used for back-up and life-safety emergency purposes only. Therefore, the total building emissions will be zero and under the building emissions benchmark since emissions from the backup generator can be exempt from the Air Quality Neutral Assessment. As there are no combustion processes under normal operation, the Proposed Development can be considered at least air quality neutral in relation to building emission.

6.3.2 Transport Emissions

The Proposed Development will be a car-free development and is expected to only generate servicing trips. The transport emissions benchmark (TEB) in the AQN LPG, only estimates car or light van trips, whereas taxis, delivery, and servicing vehicle trips are not covered by air quality neutral calculations. However, all trips have been considered in the above assessment of impacts from road traffic.

As such the total transport emission are expected to be under TEBs and therefore the Proposed Development can be considered air quality neutral in relation to transport emission.

7. Mitigation.

7.1 Construction Phase.

To mitigate the potential impacts during the construction phase it is recommended that mitigation measures as detailed in the GLA construction guidance are implemented. These mitigation measures have been carefully selected for the Proposed Development and are based upon the dust risk categories outlined in Table 10 of this report.

It is recommended that LBC approve an Air Quality Dust Management Plan (AQDMP) prior to works commencing on site, and that this is implemented using an appropriately worded planning condition. Table 11 below details the measures that should be incorporated in the AQDMP. For general mitigation measures, which excludes those specifically targeted towards demolition, earthworks, construction and trackout (which are given towards the end of the table), low risk measures have been applied as these represent the highest risk category determined in Table 10. This approach is consistent with the GLA construction guidance.

Table 11: Mitigation Measures

Issue	Mitigation Measure
Communications	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
	Display the head or regional office contact information.
Dust Management Plan	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.
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 off- site, and the action taken to resolve the situation in the log book.
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 check of surfaces such as street furniture, cars, window sills within 100 m of the site boundary, with cleaning to be provided if necessary.
	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 before work commences on site or, if it is a large site, before work on a phase commences.
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 active 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 cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicles/machinery and sustainable travel	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 applicable).
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.
	Minimize 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.
Construction	Avoid scrabbling (roughening of concrete surfaces) if possible.
	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.

Potential dust effects during the construction phase are considered to be temporary in nature. The impacts are determined to be temporary as they will only potentially occur throughout the construction phase and short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine.

However, with the application of the above dust control and mitigation measures, it is considered that impacts at all receptors will be 'not significant' in accordance with the GLA construction guidance.

7.1.1 Construction Phase Road Traffic Emissions

Potential air quality impacts associated with construction phase road traffic emissions, principally HDV movements, have been screened out for further assessment with associated impacts on air quality predicted to result in an 'insignificant' effect. Therefore, mitigation measures are not considered to be required.

7.1.2 Construction Phase NRMM Emissions

In accordance with Part 4 of the IAQM construction guidance, all NRMM would need to adhere to the emissions standards for NO_2 and PM_{10} set out for NRMM. It is therefore considered the likely effects of construction plant on local air quality would be insignificant.

7.2 Operational Phase.

7.2.1 Road Traffic Emissions

Potential air quality impacts associated with operational phase development trips have been screened out from further assessment as '*the impacts [on air quality from operational phase movements] can be considered to have insignificant effects*' in accordance with the EPUK and IAQM planning guidance. Therefore, additional mitigation measures are not considered to be required.

7.2.2 Site Suitability Assessment

A review of LBC monitoring data in consideration of the Application Site, and mapped concentrations by Defra and the LAEI in the locale of the Application Site, indicates no likely exceedance of the annual and 1-hour mean NO_2, annual mean and 24-hour PM_{10} or annual mean $PM_{2.5}$ AQOs. Although not required based on local air quality, particulate filtration is proposed as part of the proposed ventilation strategy.

As no exceedances of any considered AQOs are predicted, this follows the 1st hierarchy principle of the EPUK and IAQM planning guidance to '*prevent and avoid*' exposure'. Therefore, no embedded mitigation into the Proposed Development design is required.

While annual mean PM_{10} and $PM_{2.5}$ AQO and 24-hour mean PM_{10} concentrations are below respective AQOs, monitoring data suggests that the WHO guideline for $PM_{2.5}$ is exceeded at the Proposed Development. It is noted that, mitigation measures against particulate matter concentrations are not recommended for the sole purpose of meeting the WHO guidelines. Notwithstanding, filtration is proposed as part of the ventilation strategy for the Proposed Development.

7.2.3 Air Quality Neutral Assessment

The Proposed Development is air quality neutral in regard to both building emissions and transport emissions in line with the 2023 AQN LPG guidance. As such, no mitigation is required.

8. Summary and Conclusions.

This report details the potential air quality impacts associated proposed refurbishment and extension of 2 Waterhouse Square located within Camden, London, EC1N 2ST (the 'Application Site').

The findings of the assessment are as follows:

- The baseline assessment has shown that the Application Site is located within the LBC AQMA. There were no exceedances of the annual mean NO_2 AQO or the indicative threshold of 60 µg/m^3 for the 1-hour mean NO_2 AQO measured at passive diffusion tube monitoring locations or automatic monitoring stations within the vicinity of the Application Site in 2022. Modelled LAEI concentrations for the year 2025 and Defra predicted background concentrations for 2022 are also below the relevant AQOs for NO_2, PM_{10} and $PM_{2.5}$ concentrations;
- A qualitative assessment of the potential dust impacts during the construction of the Proposed Development has been undertaken. Through good practice and implementation of appropriate mitigation measures, it is expected that the release of dust would be effectively controlled and mitigated, with resulting impacts considered to be 'not significant'. All dust impacts are considered to be temporary and short-term in nature;
- Road traffic data generated by the Proposed Development has been provided by Velocity Transport Planning, the appointed transport consultants for the project. Traffic generated by the Proposed Development is below the screening criteria set out in the IAQM and EPUK planning guidance and the effects are not predicted to be significant, therefore further assessment is not required;
- The Proposed Development energy strategy is all electric, utilising zero emission technologies such as ASHPs. As no combustion sources are proposed for the primary energy supply, no local air quality impacts are anticipated and a detailed assessment of impacts of combustion emissions from the energy plant has been screened out of this assessment;
- The Proposed Development is air quality neutral in regard to both building and transport emissions in line with the 2023 AQN LPG guidance and as such no mitigation is required;
- A qualitative Site Suitability Assessment has been undertaken to assess the suitability of the Application Site for the proposed flexible office use. Based on the assessment results, there will be no likely exceedances of relevant AQOs for all pollutants at the Proposed Development and therefore additional mitigation is not required. Therefore, the Application Site is considered suitable for the Proposed Development without the inclusion of additional mitigation measures. Although not required based on local air quality, particulate filtration is proposed as part of the proposed ventilation strategy.

Based on the information above, it is considered that air quality should not be viewed as a constraint to planning and the Proposed Development conforms to the principles of National Planning Policy Framework, the London Plan and the LBC Local Plan.

9. Glossary of Terms.

AADT	Annual Average Daily Traffic
AHU	Air Handling Unit
ASHP	Air Source Heat Pump
AQFA	Air Quality Focus Area
AQDMP	Air Quality Dust Management Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AURN	Automatic Urban and Rural Network
Defra	Department for Environment, Food and Rural Affairs
EPUK	Environmental Protection UK
GLA	Greater London Authority
HDV	Heavy Duty Vehicles (> 3.5 tonnes gross vehicle weight)
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles (≤3.5 tonnes gross vehicle weight)
LES	London Environment Strategy
LLAQM.TG	London Local Air Quality Management Technical Guidance
µg/m^3	Micrograms per cubic metre
MAQS	Mayor's Air Quality Strategy
NO_2	Nitrogen dioxide
NO_X	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
PM_{10}	Particulate matter with an aerodynamic diameter less than 10 micrometres
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than 2.5 micrometres
PPG	Planning Practice Guidance
PV	Photovoltaics
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
Trackout	The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site
VOC	Volatile Organic Compound
WHO	World Health Organisation

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Appendix 1 - Professional Experience.

Christelle Escoffier (Hoare Lea) MsEng. Msc. PhD MIES MIAQM

Christelle Escoffier is a Senior Associate and Technical Lead for air quality group with Hoare Lea. She is a Full Member of the Institution of Environmental Sciences and the Institute of Air Quality Management. She graduated with a Master in Science Diploma from Paris VI University, France and holds a Doctor of Philosophy degree in Physical Oceanography, Meteorology and Environment, from the same University.

In her twenty-two years of professional experience, she has managed and delivered air quality services for a wide range of industries in the United Kingdom (UK), the United States of America (USA) and the Middle East. Her portfolio of experience comprehends projects for diverse sectors from road transport, planning and development, wastewater and waste, oil and gas to power (energy centres, landfill gas plant, power reserve facilities, gas-fired and oil-fired combustion turbine stations). Christelle has in-depth knowledge of atmospheric dispersion models. She has delivered dispersion modelling training courses to government agencies, academic, industrial and commercial professionals worldwide since 2005.

Andy Day (Hoare Lea), BSc (Hons), MSc, AMIEnvSc, MIAQM

Andy is a Principal Air Quality Consultant with Hoare Lea. He is an Associate Member of the Institute of Environmental Sciences and a Full Member of the Institute of Air Quality Management. He is a chemistry graduate with a Master's specialising in the catalysed removal of harmful volatile organic compounds (VOCs) often generated from the combustion of fuel in car engines.

Andy has worked on a range of projects of varying size across a number of different sectors. His experience focusses on work up to and through planning for air quality assessments and environmental impact assessments. Andy also has experience in detailed dispersion modelling of road traffic and energy combustion plant, emission mitigation statements, damage cost calculations, indoor and outdoor air quality monitoring and assessing the air quality impact at ecologically sensitive sites.

Andy has a particular interest in reducing emissions for the benefit of human health and the environment through the life cycle of a building.

Leticia Campello (Hoare Lea), BEng (Hons), MSc, AMIEnvSc, AMIAQM

Leticia is an Air Quality Consultant with Hoare Lea. She is an Associate Member of the Institution of Environmental Sciences and an Associate of the Institute of Air Quality Management. She has worked on a range of projects in different sectors including residential, commercial, laboratory and industrial.
Leticia has gained experience in air quality assessments, including detailed assessments of dust, odour, roads, and industrial emissions. Her experience has been focused on preparing air quality assessments to support planning application as well as environmental impact assessments.

T-Jay Brown (Hoare Lea), BSc, MSc, AMIAQM

T-Jay is a Graduate Air Quality Consultant with Hoare Lea. He is an Associate Member of the Institution of Environmental Sciences and an Associate Member of the Institute of Air Quality Management. T-Jay has worked on a range of projects within multiple sectors such as industrial, education and residential.

At Hoare Lea, T-Jay has worked on the air quality assessments for projects which have been successfully submitted for planning. Additionally, he has experience in undertaking detailed dispersion modelling of roads, air quality monitoring and producing indoor air quality plans. T-Jays interests lie in air quality management and its relation to public health and wellbeing.

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