125 Shaftesbury Avenue

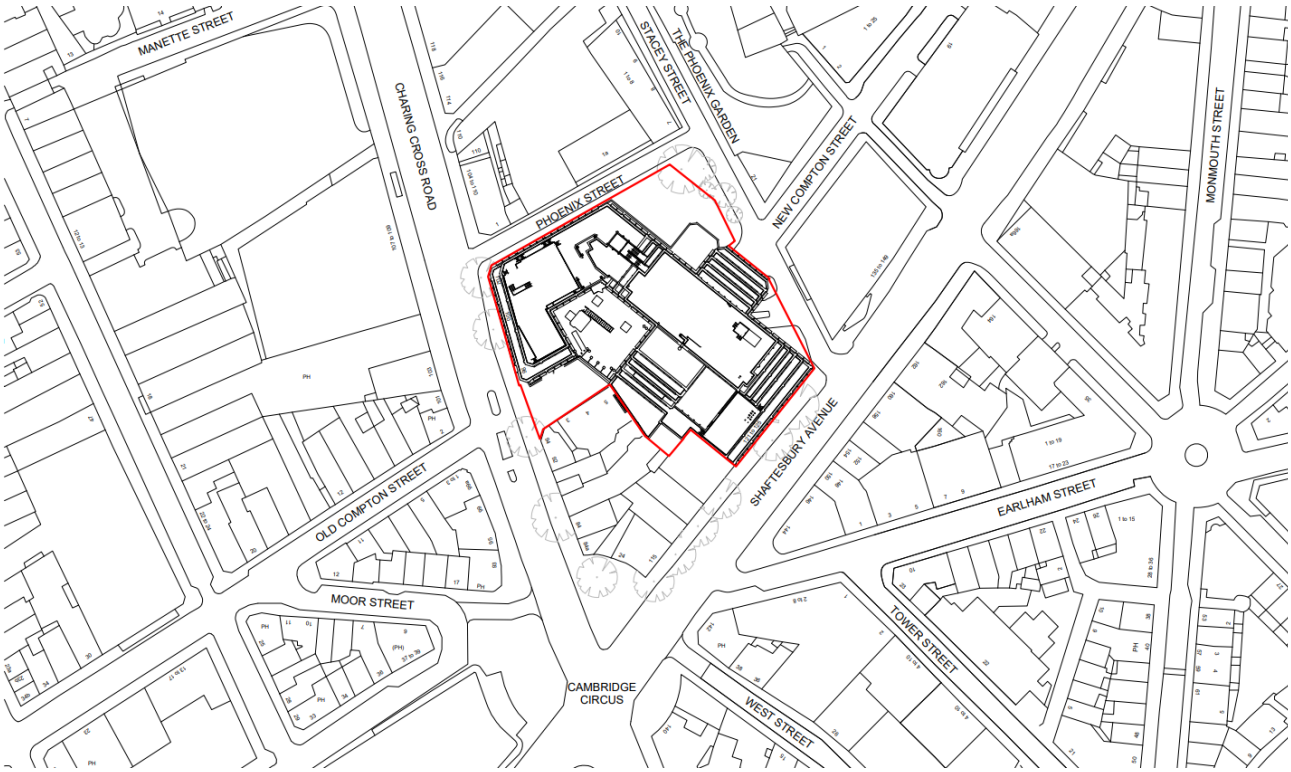
Air Quality & Air Quality Neutral Assessment

Prepared by Tetra Tech

Submitted on behalf of VREF Shaftesbury SCS

November 2024

125 Shaftesbury Avenue, WC2H 8HR



Air Quality Assessment

784-B067969
28th November 2024

PRESENTED TO

VREF Shaftesbury SCS

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EXECUTIVE SUMMARY

This report presents the findings of an air quality assessment undertaken to assess road traffic emissions and construction dust impacts in support of a planning application for the construction of a new mixed-use development, on the site of the 125 Shaftesbury Avenue within the London Borough of Camden, WC2H 8HR.

The Proposed Development consists of the “remodeling, refurbishment and extension of the existing building to provide Use Class E commercial and retail space, amenity terraces, a new public route, relocated entrances, cycle parking, servicing and rooftop plant along with associated highway, landscaping and public realm improvements and other associated works” (the Proposed Development).

Construction Phase

The potential effects during the demolition and construction phases include fugitive dust emissions from site activities, such as earthworks, construction and trackout.

During the construction phase, site specific mitigation measures detailed within this assessment will be implemented. With these mitigation measures in place, impacts from dust during the construction phase are not predicted to be significant.

Detailed dispersion modelling of traffic pollutants from the peak construction year has been undertaken for the proposed development. Through confirmation of development plans, the peak construction phase is 2027. However, 2025 has been used as the year for future scenarios, which represents a conservative worst-case approach. The use of 2025 is seen to be a more conservative approach as a result of the continued electrification of vehicles and improvements in emission rates between the UK fleet of cars between the two years.

A peak construction year assessment has been undertaken to assess the effects of the Proposed Development. The impacts during the peak construction phase takes into account exhaust emissions from vehicles associated with the Proposed Development.

The long-term (annual) assessment of the effects associated with the proposed development with respect to Nitrogen Dioxide (NO_2) is determined to be ‘negligible’. With respect to PM_{10} and $PM_{2.5}$ exposure, the effect is determined to be ‘negligible’ at all identified existing sensitive receptor locations.

All proposed receptor locations are expected to be exposed to air quality above the current Air Quality Objective AQO) for NO_2 and below the current AQOs for PM_{10} and $PM_{2.5}$. No further mitigation is required to protect sensitive receptors from the associated traffic of the Proposed Development during the peak construction year.

Operational Phase

The Proposed Development is anticipated to be car free in nature. As such the predicted change in traffic flows during the operational phase fall below the EPUK/IAQM Land-Use Planning Guidance criteria that trigger a quantitative assessment for locations within AQMAs. Therefore, a detailed dispersion modelling assessment for the operational phase was deemed unnecessary.

It has been confirmed with reference to the Energy and Sustainability Statement produced by Sweco (dated 8th November 2024) that the proposed development will not include installation of CHP or other heat source

emissions and can therefore be considered air quality neutral. The development trip rate is below the benchmark trip rate and therefore the development can be considered Air Quality Neutral in relation to building and transport emissions.

Based on the assessment results and with the proposed mitigation in place, it is considered that the development proposals comply with national and local policy for air quality.

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AADT	Annual Average Daily Traffic
ADMS	Atmospheric Dispersion Modelling Software
AQAL	Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Standards
CHP	Combined Heat and Power
CL	Critical Level
CO	Carbon Monoxide
DEFRA	Department for Environment Food & Rural Affairs
EAL	Environmental Assessment Limits
EC	European Commission
EFT	Emissions Factors Toolkit
EPUK	Environmental Protection UK
EU	European Union
EPAQS	Expert Panel on Air Quality Standards
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
LBC	London Borough of Camden
LBW	London Borough of Westminster
NGR	United Kingdom National Grid Reference
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
PC	Process Contribution
MHCLG	Ministry for Housing, Communities and Local Government
NPPF	National Planning Policy Framework
OS	UK Ordnance Survey
PEC	Predicted Environment Concentration
PPG	Planning Policy Guidance
PPS	Planning Policy Statements
SAC	Special Areas of Conservation
SPA	Special Protection Area

Acronyms/Abbreviations	Definition
SSSI	Sites of Special Scientific Interest
VOC	Volatile Organic Compounds
WHO	World Health Organization
UK	United Kingdom

1.0 INTRODUCTION

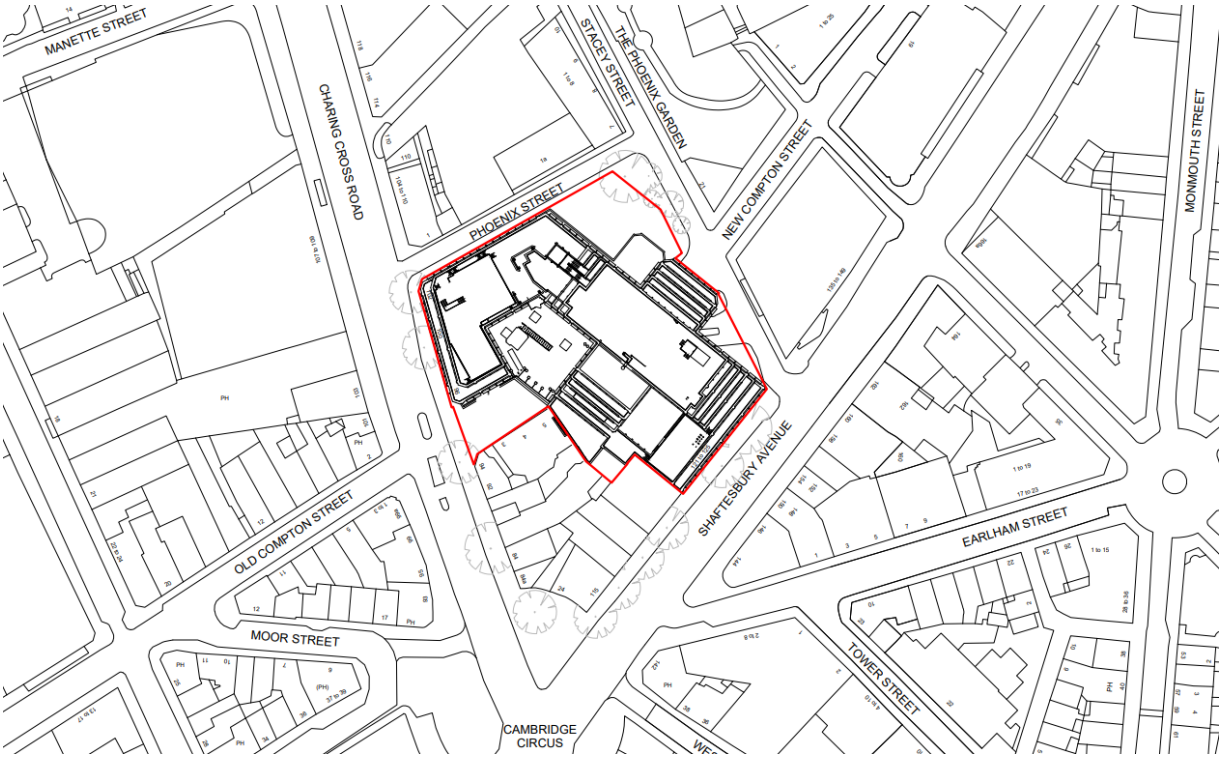
This report presents the findings of an air quality assessment undertaken to assess road traffic emissions and construction dust impacts in support of a planning application for the construction of a new development, on the site of the 125 Shaftesbury Avenue, London, WC2H 8HR. The site falls within the jurisdiction of the London Borough of Camden (LBC). The Proposed Development consists of the "remodeling, refurbishment and extension of the existing building to provide Use Class E commercial and retail space, amenity terraces, a new public route, relocated entrances, cycle parking, servicing and rooftop plant along with associated highway, landscaping and public realm improvements and other associated works" (the Proposed Development).

1.1 SITE LOCATION

The central Grid Reference is approximately 529936, 181121. The application site is bounded to the north-west by the Phoenix Street followed by the Phoenix Theatre and a mixture of commercial/retail and residential properties. To the north-east, the site is bound by Stacey Street followed by the Phoenix Garden and the Odeon Covent Garden Cinema. To the south-east, the site is bordered by Shaftesbury Avenue followed by commercial/retail and residential properties. The application site is bound by Trentishoe Mansions and more commercial/retail and residential properties. To the west, the site is bordered by Charring Cross Road followed by commercial/retail and residential properties and Saint Martin Art School.

Reference should be made to **Figure 1-1** for a map of the Red Line Boundary of the application site and the surrounding area.

Figure 1-1. Red Line Boundary of the Application Site and the Surrounding Area



Red Line Boundary provided by Client (2024)

1.2 CONTEXT

The primary source of the air quality pollutants associated with the proposed scheme is from vehicle movements, arriving and departing the proposed development. The traffic data generated by the development has been assessed at the surrounding existing sensitive receptors.

The following assessment stages have been undertaken as part of this assessment:

- Baseline Conditions evaluation;
- Assessment of potential air quality impacts during the construction phase;
- Assessment of potential air quality impacts during the operational phase;
- Air Quality Neutral Assessment**;** and,
- Identification of mitigation measures.

The results of the assessment are detailed in the following sections of this report.

The construction phase assessment considers the potential effects of dust and particulate emissions from site activities and materials movement using a qualitative risk assessment method based on the Institute of Air Quality Management's (IAQM) 'Guidance on the Assessment of Dust from Demolition and Construction' document, published in 2024.

The assessment of the potential air quality impacts that are associated with the operational phase has focused on the predicted impact of changes in ambient nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of less than 10 µm (PM_{10}) and less than 2.5 µm ($PM_{2.5}$) as a result of the development at key local receptor locations. The changes have been referenced to EU air quality limits and UK air quality objectives and the magnitude and impact description of the changes have been referenced to non-statutory guidance issued by the IAQM and Environmental Protection UK (EPUK).

1.3 REPORT STRUCTURE

Following this introductory section, the remainder of this report is structured as follows:

- Section 2.0: Policy and Legislative Context
- Section 3.0: Assessment Methodology
- Section 4.0: Baseline Conditions
- Section 5.0: Assessment of Air Quality Impacts – Construction Dust Assessment
- Section 6.0: Assessment of Air Quality Impacts – Construction Phase
- Section 7.0: Air Quality Neutral Assessment
- Section 8.0: Mitigation
- Section 9.0: Conclusions

All technical Appendices are included at the end of this report for information.

2.0 POLICY AND LEGISLATIVE CONTEXT

2.1 DOCUMENTS CONSULTED

The following documents were consulted during the undertaking of this assessment:

Legislation and Best Practice Guidance

- The Air Quality Standards Regulations (Amendments), 2019[1];
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra, 2007[2];
- The Air Quality Strategy for England, Defra, 2023[3];
- The Environment Act 1995[4];
- The Environment Act 2021[5];
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[6];
- National Planning Policy Framework, Ministry for Housing, Communities and Local Government, Revised December 2023[7];
- Planning Practice Guidance: Air Quality, Ministry for Housing, Communities and Local Government, November 2019[8];
- Greater London Authority (GLA) The London Plan, March 2021[9];;
- Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, 2017[10];
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1), IAQM, May 2020[11];
- Guidance on the Assessment of Dust from Demolition and Construction, IAQM, Version 2.2, January 2024[12];
- Local Air Quality Management Technical Guidance LAQM.TG (22), Defra, 2022[13];
- London Local Air Quality Management Technical Guidance LLAQM.TG (19), Mayor of London[14], 2019;

[1] UK Parliament, (2019). 'The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019', HMSO, London.
[2] Department for Environment, Food & Rural Affairs (DEFRA), (2007). 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', HMSO, London.
[3] Department for Environment, Food & Rural Affairs (DEFRA), (2023), 'Air Quality Strategy: framework for local authority delivery'. Available on: Air quality strategy: framework for local authority delivery - GOV.UK (www.gov.uk)
4 UK Government, (1995) 'Environment Act 1995'
[5] UK Government, (2021) 'Environment Act 2021'
[6] Department for Environment, Food & Rural Affairs (DEFRA), (2023), 'The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023'.
[7] Ministry of Housing, Communities and Local Government, (2023), 'National Planning Policy Framework', London.
[8] Ministry of Housing, Communities and Local Government, (2019), 'Planning Practice Guidance-Air Quality', Ministry of Housing, Communities and Local Government, London. Available on: https://www.gov.uk/guidance/air-quality--3#history.
[9] Greater London Authority (GLA), (2021), 'The London Plan', GLA, London
[10] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London
[11] IAQM (2020), 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1)', IAQM, London.
[12] IAQM, (2024). 'Assessment of dust from demolition and construction 2024 v2.2', IAQM, London.
[13] Department of Environment, Food and Rural Affairs (DEFRA). (2022). 'Local Air Quality Management Technical Guidance (TG22)'. DEFRA, London
[14] Greater London Authority (GLA), (2019), 'London Local Air Quality Management (LLAQM) Technical Guidance 2019 (LLAQM.TG (19))', GLA, London.

- COVID-19 Supplementary Guidance – Local Air Quality Reporting in 2021, 2021[15].
- London Plan Supplementary Planning Guidance (SPG) 'The Control of Dust and Emissions during Construction and Demolition', July 2014[16];
- Greater London Authority (GLA) London Environment Strategy, May 2018[17];
- London Planning Guidance, Air Quality Neutral, February 2023[18].

Websites Consulted

- Google maps (maps.google.co.uk);
- The UK National Air Quality Archive (www.airquality.co.uk);
- Department for Transport: Road Traffic Statistics (https://roadtraffic.dft.gov.uk/);
- Multi-Agency Geographic Information for the Countryside (http://magic.defra.gov.uk/);
- Planning Practice Guidance (http://planningguidance.planningportal.gov.uk/); and,
- London Borough of Camden (https://www.camden.gov.uk/).
- London Borough of Westminster (https://www.westminster.gov.uk/).

Site Specific Reference Documents

- London Borough of Camden, Air Quality Annual Status Report 2023[19];
- Westminster City Council, Air Quality Annual Status Report 2022[20]; and,
- London Borough of Camden, Local Plan 2017[21];
- London Borough of Camden, Emerging Local Plan[22]

2.2 AIR QUALITY LEGISLATIVE FRAMEWORK

European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- **Directive 1999/30/EC** – the First Air Quality 'Daughter' Directive – sets ambient air limit values for NO_2 and oxides of nitrogen, sulphur dioxide, lead and PM_{10};
- **Directive 2000/69/EC** – the Second Air Quality 'Daughter' Directive – sets ambient air limit values for benzene and carbon monoxide; and,

[15] Greater London Authority (GLA). (2021). 'Local Air Quality Management Reporting in 2021 COVID-19 Supplementary Guidance'. GLA, London
[16] Mayor of London (2014). 'The Control of Dust and Emissions During Construction and Demolition-Supplementary Planning Guidance (SPG)'. Greater London Authority (GLA). London.
[17] Greater London Authority (GLA), (2018), 'London Environment Strategy', GLA, London
[18] Greater London Authority (GLA), (2023). 'London Plan Guidance - Air Quality Neutral'. GLA. London
[19] London Borough of Camden Council, (2024). 'London Borough of Camden Council 2023 Air Quality Annual Status Report'. (LBC)
[20] Westminster City Council, (2023). 'Westminster City Council 2022 Air Quality Annual Status Report'. (WCC)
[21] London Borough of Camden Council, (2017). 'Camden Local Plan 2017'. (LBC)
[22] London Borough of Camden Council, (2024). ' Draft New Camden Local Plan'. (LBC).

- **Directive 2002/3/EC** – the Third Air Quality 'Daughter' Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- **Directive 2004/107/EC** – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

The European Commission (EC) Directive Limits, outlined above, have been transposed in the UK through the Air Quality Standards Regulations. In the UK responsibility for meeting ambient air quality limit values is devolved to the national administrations in England, Scotland, Wales and Northern Ireland.

The European Union (Withdrawal) Act 2018 (EUWA) provides a new framework for the continuity of 'retained EU law' in the UK. EU Directives no longer have to be implemented by the UK except to any extent agreed or decided by the UK unilaterally.

EUWA retains the domestic effect of EU Directives to the extent already implemented in UK law, by preserving the relevant domestic implementing legislation enacted in UK law before 'Implementation Period' completion day. Though the EU Directives are not retained, following the UK's departure from the EU, the EUWA converts the current framework of Air Quality targets, however the role that the EU instructions were party to are lost.

UK Legislation

The Air Quality Standards Regulations (Amendments 2016) seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001, Part 7 Regulation 31 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments. The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 amends the AQO for $PM_{2.5}$ outlined within the Air Quality Standards Regulations (2010 & 2016 Amendments).

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in **Table 2-1** and **Table 2-2** along with European Commission (EC) Directive Limits and World

Health Organisation (WHO) Guidelines. The ecological levels are based on WHO and CLRTAP (Convention on Long-range Transboundary Air Pollution) guidance.

Table 2-1. Air Quality Standards, Objectives, Limits and Target Values

Pollutant	Applies	Objective	Concentration Measured as[10]	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM_{10}	UK	50 µg/m^3 by end of 2004 (max 35 exceedances a year)	24-hour Mean	1st January 2005	50 µg/m^3 by end of 2004 (max 35 exceedances a year)	1st January 2005	Retain Existing
	UK	40 µg/m^3 by end of 2004	Annual Mean	1st January 2005	40 µg/m^3	1st January 2005	
$PM_{2.5}$	UK	20 µg/m^3	Annual Mean	1st January 2020	-	-	Retain Existing
	UK	10 µg/m^3	Annual Mean	31st December 2040	-	-	New
	UK	10 µg/m^3	Annual Mean	31st December 2030	-	-	New*
NO_2	UK	200 µg/m^3 not to be exceeded more than 18 times a year	1-Hour Mean	31st December 2005	200 µg/m^3 not to be exceeded more than 18 times a year	1st January 2010	Retain Existing
	UK	40 µg/m^3	Annual Mean	31st December 2005	40 µg/m^3	1st January 2010	

*Mayor of London ambition target for $PM_{2.5}$ by 2030

Table 2-2. Ecological Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as
NO_X	UK	30 µg/m^3	Annual Mean

Within the context of this assessment, the annual mean objectives are those against which facades of residential receptors will be assessed and the short-term objectives apply to all other receptor locations, where people may be exposed over a short duration, both residential and non-residential such as using gardens, balconies, walking along streets, using playgrounds, footpaths or external areas of employment uses.

Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA).

Environment Act 2021

The Environment Act (2021) introduces a commitment to create a legally binding duty on government to reduce the concentrations of fine particulate matter ($PM_{2.5}$) in ambient air, and to set a long-term target expected to be 10 µg/m^3, a reduction from the current Air Quality objective of 20 µg/m^3 set out within the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020. The Environment Act 2021 requires a draft of a statutory instrument (or drafts of statutory instruments) containing regulations stating that the $PM_{2.5}$ air quality target must come into force.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 was published on 31st January 2023, and came into force the following day. The 2023 Regulations introduce a reduced long-term annual average Air Quality Objective for $PM_{2.5}$ of 10 µg/m^3, a reduction from the current Air Quality objective of 20 µg/m^3 set out within the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020. Additionally, the 2023 Regulations introduce a population exposure target for $PM_{2.5}$ where there is at least a 35% reduction in population exposure by the end of 31st December 2040, as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018.

It should be noted that, whilst the UK Government and Defra has recently set two new targets for Particulate Matter ($PM_{2.5}$) (as per The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023), in March 2023, the Department for Levelling Up, Housing and Communities (DLUHC) explained that the new $PM_{2.5}$ targets will "…*need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of $PM_{2.5}$. The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance.*" This approach was detailed within the Chief Planners Newsletter, published by the DLUHC[1]. Therefore, until the new guidance referenced by the DLUHC is published, there is no specific requirement to assess against these new targets.

2.3 PLANNING AND POLICY GUIDANCE

National Policy

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF), revised December 2023, principally brings together and summarizes the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policy making. The NPPF states that:

Paragraph 180

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions*

such as air and water quality, taking into account relevant information such as river basin management plans."

Paragraph 192

"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 191

"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 194

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

Planning Practice Guidance (PPG)

The Planning Practice Guidance (PPG) web-based resource was updated by the Ministry for Housing, Communities and Local Government (MHCLG) on 1st November 2019 to support the National Planning Policy Framework and make it more accessible. A review of PPG: Air Quality identified the following guidance

Paragraph: 001 (Reference ID: 32-001-20191101)

"The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health such as particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2).

The UK also has national emission reduction commitments for overall UK emissions of 5 damaging air pollutants:

- *fine particulate matter ($PM_{2.5}$);*
- *ammonia (NH_3);*

- *nitrogen oxides (NO_x);*
- *sulphur dioxide (SO_2); and*
- *non-methane volatile organic compounds (NMVOCs).*

As well as having direct effects on public health, habitats and biodiversity, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. Odour and dust can also be a planning concern, for example, because of the effect on local amenity."

Further guidance referring to additional considerations when assessing air quality impacts is outlined below;

Paragraph: 006 (Reference ID: 32-001-20191101)

"Considerations that may be relevant to determining a planning application include whether the development would:

- *Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield…*
- *Introduce new point sources of air pollution…*
- *Expose people to harmful concentrations of air pollutants…*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity…".*

Guidance on how detailed an air quality assessment needs to be provided and how air quality can be mitigated is stated below:

Paragraph: 007 (Reference ID: 32-001-20191101)

"Assessments need to be proportionate 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…".

…Mitigation option will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with the applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented…".

Regional Policy

The London Borough of Camden (LBC) lies within the Greater London Authority (GLA) Area. The 2021 London Plan addresses the improvement of air quality. Following a review of policies within the 2021 London Plan, the following were identified as being relevant to the proposed development from an air quality perspective:

***"**Policy SD4 The Central Activities Zone (CAZ)*

D. Taking account of the dense nature of the CAZ, practical measures should be taken to improve air quality, using an air quality positive approach where possible (Policy SI 1 Improving air quality) and to address issues related to climate change and the urban heat island effect."

"Policy D1 London's form, character and capacity for growth

A. Boroughs should undertake area assessments to define the characteristics, qualities and value of different places within the plan area to develop an understanding of different areas' capacity for growth. Area assessments should cover the elements listed below:
5)air quality and noise levels."

"Policy D3 Optimising site capacity through the design-led approach

Experience

9) help prevent or mitigate the impacts of noise and poor air quality."

"Policy E5 Strategic Industrial Locations (SIL)

D. Development proposals within or adjacent to SILs should not compromise the integrity or effectiveness of these locations in accommodating industrial type activities and their ability to operate on a 24-hour basis. Residential development adjacent to SILs should be designed to ensure that existing or potential industrial activities in SIL are not compromised or curtailed. Particular attention should be given to layouts, access, orientation, servicing, public realm, air quality, soundproofing and other design mitigation in the residential development."

"Policy E7 Industrial intensification, co-location and substitution

D. The processes set out in Parts B and C above must ensure that: f)) air quality, including dust, odour and emissions and potential contamination."

"Policy SI1 Improving Air Quality

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 retrofitted 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:

a) How proposals have considered ways to maximise benefits to local air quality, and

b) 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."

Local Policy

The Local Plan was adopted in July 2017 and sets out the vision for shaping the future of the Borough and contains policies for guiding planning decisions. The Local Plan replaces the Core Strategy and Camden Development Policies document and is now the main document for planning decisions and future development within LBC.

Following a review of the LBC Local Plan 2017 ,the following policy concerning air quality was identified.

LBC Local Plan

"Policy CC24: 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.

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

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

LBC Emerging Local Plan

*"**Policy A3 – Air Quality***

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

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

ii. *Require the following types of development to submit an Air Quality Assessment, where requested by the Council, the Air Quality Assessment must be supported by detailed air quality modelling:*

    a. *All major developments;*

    b. *Any development that introduces sensitive uses or occupiers into an area of poor air quality;*

    c. *Development that involves significant demolition, construction and/or earthworks;*

    d. *Any development that could have a significant impact on air quality, either directly or indirectly; or*

    e. *Any development involving a biomass or gas Combined Heat Plant (including connections to existing networks where the increased capacity is not already covered in an existing Air Quality Assessment).*

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

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

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

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

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

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

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

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

3.0 ASSESSMENT METHODOLOGY

There is potential for environmental effects during the operational phase of the proposed development due to emissions from proposed vehicle movements. The significance of potential environmental effects is assessed according to the latest guidance produced by EPUK and IAQM in January 2017 '*Land-Use Planning & Development Control: Planning for Air Quality*', May 2020 '*A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*' and January 2023 *'Ecological Assessment of Air Quality Impacts'*.

The EPUK and IAQM in January 2017 '*Land-Use Planning & Development Control: Planning for Air Quality*' guidance document outlines the criteria used for screening the need for an Air Quality Assessment.

Table 3-1. Indicative Criteria for Requiring an Air Quality Assessment

The Development will:	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA. - more than 500 AADT elsewhere.
Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA. - more than 100 AADT elsewhere.
Realign roads, i.e. changing the proximity of receptors to traffic lanes	Where the change is 5m or more and the road is within an AQMA.
Introduce a new junction or remove an existing junction near to relevant receptors	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
Introduce or change a bus station	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA. - more than 100 AADT elsewhere.
Have an underground car park with extraction system	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).

The methodology used to determine the potential air quality effects of the construction phase of the proposed development has been derived from the IAQM '*Guidance on the Assessment of the Impacts of Dust from Demolition and Construction'* document and is summarised in Section 5.0.

3.1 DETERMINING IMPACT DESCRIPTION OF THE AIR QUALITY EFFECTS

The impact description of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in January 2017. The guidance provides a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall impact description of the air quality effects based on severity of air quality impacts.

The following rationale is used in determining the severity of the air quality effects at individual receptors:

1. The change in concentration of air pollutants, air quality effects, are quantified and evaluated in the context of Air Quality Action Level (AQAL). The effects are provided as a percentage of the Air Quality Objective (AQO), which may be an AQO, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)';

2. The absolute concentrations are also considered in terms of the AQAL and are divided into categories for long term concentration. The categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential to change increases as absolute concentrations are close to or above the AQAL;
3. Severity of the effect is described as qualitative descriptors; negligible, slight, moderate or substantial, by taking into account the combination of the harm potential and the air quality effect. This means that a small increase at a receptor which is already close to or above the AQAL will have higher severity compared to a relatively large change at a receptor which is significantly below the AQAL;
4. The effects can be adverse when pollutant concentrations increase or beneficial when concentrations decrease as a result of development;
5. The judgement of the overall impact description of the effects is then based on severity of effects on all the individual receptors considered; and,
6. Where a development is not resulting in any change in emissions itself, the impact description of effect is based on the effect of surrounding sources on new residents or users of the development, i.e., will they be exposed to levels above the AQAL.

Table 3-2. Impact Descriptors for Individual Receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2-5	6-10	>10
≤75% of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109 of AQAL	Moderate	Moderate	Substantial	Substantial
≥110 of AQAL	Moderate	Substantial	Substantial	Substantial

**Air Quality Action Level – in this case the objective levels.*

In accordance with explanation note 2 of Table 6.3 of the EPUK & IAQM guidance, the Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5%, will be described as Negligible.

Where such peak short-term concentrations from an elevated source are in the range 11-20% of the relevant AQAL, then their magnitude can be described as small, those in the range 21-50% medium and those above 51% as large. These are the maximum concentrations experienced in any year and the severity of this impact can be described as slight, moderate and substantial respectively, without the need to reference background or baseline concentrations. That is not to say that background concentrations are unimportant, but they will, on an annual average basis, be a much smaller quantity than the peak concentration caused by a substantial plume and it is the contribution that is used as a measure of the impact, not the overall concentration at a receptor. This approach is intended to be a streamlined and pragmatic assessment procedure that avoids undue complexity

In most cases, the assessment of impact severity for a proposed development will be governed by the long-term exposure experienced by receptors and it will not be a necessity to define the significance of effects by reference to short-term impacts. The severity of the impact will be substantial when there is a risk that the relevant AQAL for short-term concentrations is approached through the presence of the new source, taking into account the contribution of other prominent local sources.

3.2 ESTIMATING HOURLY AND DAILY MEAN CONCENTRATIONS

The latest Local Air Quality Management (LAQM) Technical Guidance TG (22) has been used for predicting 1 hourly and 24-hourly pollutant concentrations.

The guidance states that the one hour mean NO_2 AQO of 200 µg/m^3 is not likely to be exceeded at any roadside locations if the annual mean concentration is below 60 µg/m^3. Therefore, this assessment evaluates the likelihood of exceeding the hourly average NO_2 objective by comparing predicted annual average NO_2 concentrations at all receptors to an annual average equivalent threshold of 60 µg/m^3 NO_2. Where predicted concentrations are below this value, it can be concluded that the hourly average NO_2 objective is likely to be achieved.

Additionally, it is understood that the 24-hour PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3. Therefore, this assessment evaluates the likelihood of exceeding the hourly average PM_{10} objective by comparing predicted annual average PM_{10} concentrations at all receptors to an annual average equivalent threshold of 32 µg/m^3 PM_{10}. Where predicted concentrations are below this value, it can be concluded that the hourly average 24-hour mean objective is likely to be achieved.

In accordance with the TG (22) guidance, the short term 24 hourly PM_{10} mean concentrations can be calculated using the following equation as presented below.

$$\boldsymbol{Number\ of\ 24\ hour\ mean\ exceedances = -18.5 + 0.00145\ x\ annual\ mean^3 + \left(\frac{206}{annual\ mean}\right)}$$

4.0 BASELINE CONDITIONS

4.1 AIR QUALITY REVIEW

This section provides a review of the existing air quality in the vicinity of the application site in order to provide a benchmark against which to assess potential air quality impacts of the proposed development. Baseline air quality in the vicinity of the application site has been defined from several sources, as described in the following sections.

Local Air Quality Management (LAQM)

The proposed development site falls within the jurisdiction of the London Borough of Camden (LBC) and close to the neighbouring Westminster City Council (WCC).

As required under section 82 of the Environment Act 1995, LBC and neighbouring WCC have both undertaken an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) are above the relevant AQOs across locations of relevant public exposure within the Borough. Therefore, both LBC and WCC have designated the entire boroughs as an Air Quality Management Area (AQMA).

Table 4-1. Local Authority AQMA Details

AQMA	Description	Date Declared	Date Amended	Pollutants Declared
Camden AQMA	**Entire Borough**	20/09/2002	N/A	Annual Mean Nitrogen Dioxide NO_2 and 24-Hour Mean Particulate Matter PM_{10}
Westminster AQMA	**Entire Borough**	09/03/1999	N/A	1-Hour and Annual Mean Nitrogen Dioxide NO_2 and 24-Hour and Annual Mean Particulate Matter PM_{10}

The proposed development site is situated within the Camden AQMA, therefore existing receptors within the AQMA have been included as part of the modelling assessment.

However, it should be noted that the extent of this AQMA is based on work undertaken in 2002 and therefore potentially out of date.

As such, the modelling work in this assessment, which is verified to local monitoring, should be considered to be a more precise and up to date assessment of pollutant levels at the site. The assessment considers potential exposure to pollutants by future occupiers rather than simply considering the extent of the AQMA represents a theoretical delineation of harm. It should be also noted that the AQMA is a management area, where pollutant levels should be 'managed' by the local authority air quality action plan and should not be considered to be a planning constraint in itself.

Air Quality Monitoring

In August 2024, LBC published their latest 2023 Air Quality Annual Status Report (ASR) which provides annual mean monitoring data between 2019-2023. Whereas, in July 2023 WCC published their latest 2022 Air Quality Annual Status Report (ASR) which provides annual mean monitoring data between 2018-2022.

Due to the COVID-19 pandemic, and associated governmental restrictions, monitoring years 2020 and 2021 are not considered to be representative due to the reduced emissions associated with governmental restrictions. Additionally, due to the fact that 2022 concentrations have not returned to the levels previously recorded prior to the COVID-19 pandemic and a lack of 2023 monitoring data across the closest monitoring locations, it has been concluded that 2019 monitoring data is considered to be worst-case when used to inform the baseline review and ADMS-Roads model verification. The most representative monitoring data within LBC and WCC were undertaken during 2019.

Monitoring of air quality within LBC has been undertaken through both automatic and non-automatic monitoring methods in 2019. In addition to this, automatic monitoring stations operated by the Westminster City Council (WCC) are located within the study area of the assessment and so have been included in the baseline monitoring locations below. WCC did not undertake non-automatic monitoring via diffusion tubes until 2021 and therefore non-automatic monitoring for WCC has been scoped out of this baseline evaluation.

Automatic Monitoring

Both LBC and WCC undertook automatic pollution monitoring during 2019 at various locations across the two boroughs. The closest monitoring location is Oxford Street East of WCC, which is located approximately 440m north-west of the application site. The most representative data is from 2019 which is presented in **Table 4-2**.

Table 4-2. Monitored Annual Mean Pollutant Concentrations at the Closest Automatic Monitoring Locations

Site ID	Location	Site Type	Distance from Kerb of Nearest Road (m)	Inlet Height (m)	2019 NO_2 Annual Mean Concentration (µg/m^3)	2019 PM_{10} Annual Mean Concentration (µg/m^3)	2019 $PM_{2.5}$ Annual Mean Concentration (µg/m^3)
LBC Monitoring Locations							
BL0	London St. Pancreas International Station	Urban Background	27	4	32	18	11
CD9	Euston Road	Roadside	0.5	2.5	**70**	22	14
WCC Monitoring Locations							
Marylebone Road	Marylebone Road	Kerbside	1.5	2.5	**63**	24	-
Oxford Street	Oxford Street	Kerbside	1.0	1.5	**55**	27	-
Duke Street	Duke Street	Roadside	2.0	2	**41**	-	-
Cavendish Square	Cavendish Square	Roadside	5.0	1.7	**50**	25	-
Oxford Street East	Oxford Street East	Roadside	1.2	1.7	**51**	24	-
Covent Garden	Covent Garden	Urban Background	-	2	39	-	-
Strand	Strand	Roadside	2.5	1.8	**76**	-	-
All Monitoring Stations are located within AQMAs.							

As outlined in **Table 4-2**, all but two monitoring locations monitored annual average concentrations above the AQO for NO_2 (40 µg/m^3 annual mean), and all locations were below the PM_{10} (40 µg/m^3 annual mean), and $PM_{2.5}$ (20 µg/m^3 annual mean) objectives where data was available for 2019. The closest automatic monitoring station to the application site recorded concentrations of 51 µg/m^3 and 24 µg/m^3 for NO_2 and PM_{10}, respectively.

Non - Automatic Monitoring

LBC operated a network of passive diffusion tubes during 2019 in various locations across the borough, of which 9 were within the study area of the assessment. The closest diffusion tube is diffusion tube CA21, which is located on Werrington Road, approximately 456 m north-east of the application site. The most recently available diffusion tube data is from 2019 which is presented in **Table 4-3**. Please note that WCC did not undertake diffusion tube monitoring until 2021 and therefore no concentrations for the borough can be presented for 2019.

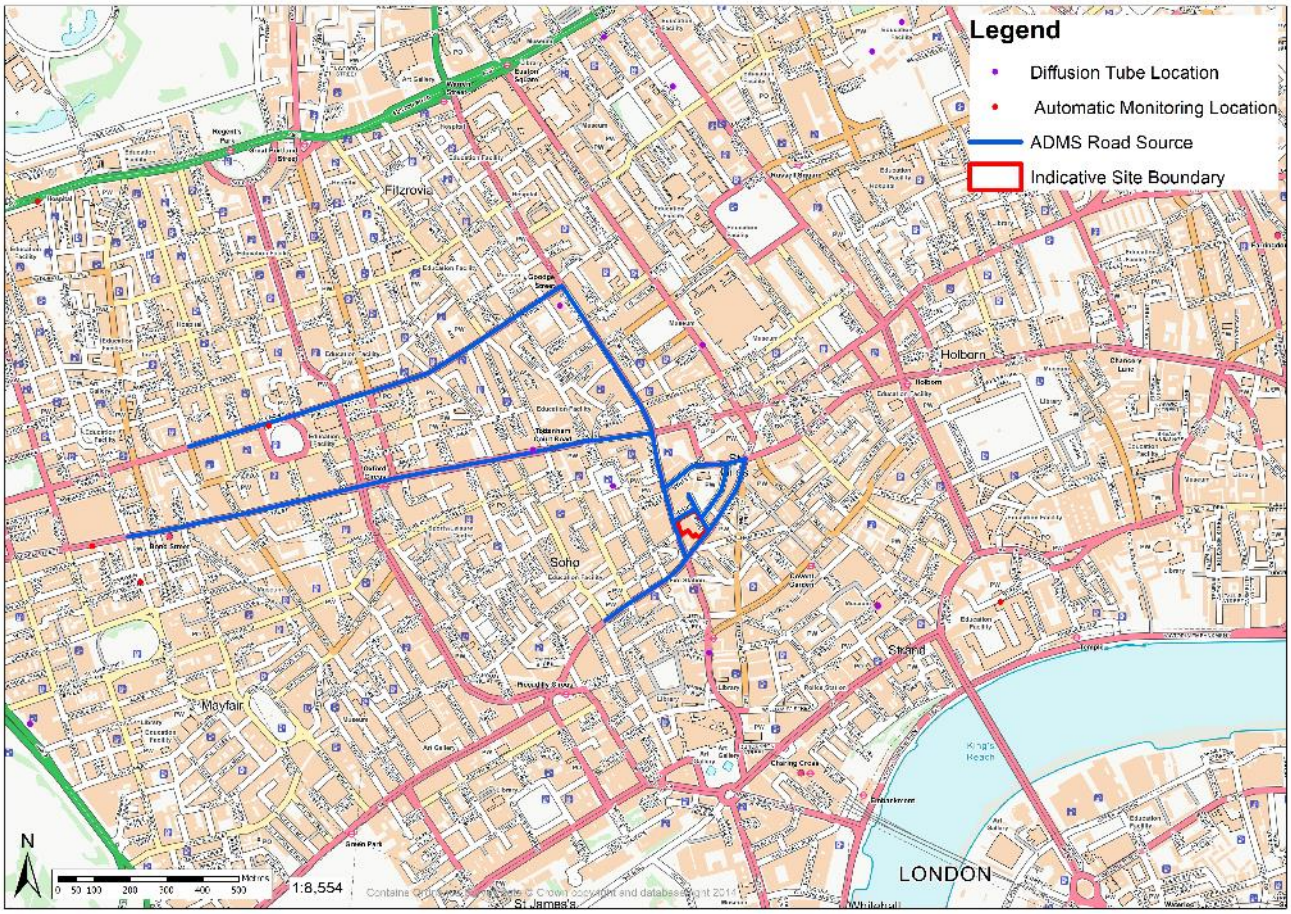
Table 4-3. Monitored Annual Mean NO_2 Concentrations at Diffusion Tubes

Site ID	Location	Site Type	Distance from Kerb (m)	Inlet Height (m)	Monitored 2019 Annual Mean NO_2 Concentration ($\mu g/m^3$)
CA10	Tavistock Gardens	Urban Background	2	2.5	**40**
CA11	Tottenham Court Road	Kerbside	2.9	2.6	33
CA20A	Brill Place	Roadside	2.2	2.7	34
CA21	Bloomsbury Street	Kerbside	<1	2.2	**49**
CA27	Euston Road LAQN colocation	Roadside	0.5	2	**65**
CA28	St. George's Gardens East	Urban Background	29	1.5	28
CA29	Endsleigh Gardens	Roadside	0.5	2	**49**
CA4A	Euston Road	Kerbside	0.5	2.2	**70**
CA6	St. George's Gardens	Urban Background	30	1.8	25
All Monitoring Stations are located within AQMAs.					

As indicated in **Table 4-3**, five diffusion tube locations within the Air Quality Assessment area monitored annual average NO_2 concentrations were above the AQO for NO_2 (40 $\mu g/m^3$ annual mean) during 2019. The closest monitoring location (CA21) for which diffusion tube data was available, is located approximately 0.45 m to the north-east of the Site, recording a concentration of 49 $\mu g/m^3$.

It should be noted that as part of the model verification a review of diffusion tubes locations and monitoring heights was undertaken. As part of this process, the locations and monitoring heights were adjusted following desk-based review using Google Maps.

Figure 4-1. Local Authority Monitoring Locations

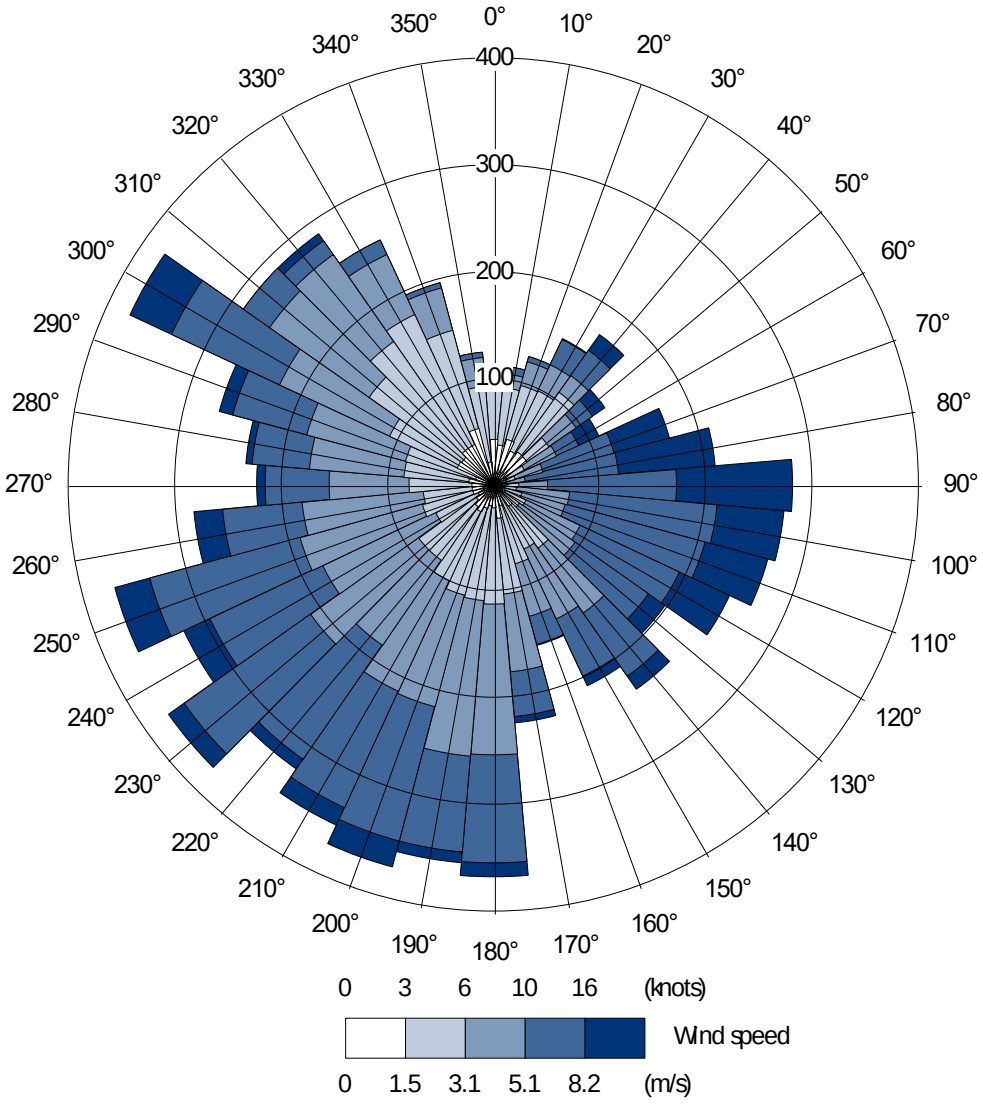


4.2 METEOROLOGY

Meteorological conditions have significant influence over air pollutant concentrations and dispersion. Pollutant levels can vary significantly from hour to hour as well as day to day, thus any air quality predictions need to be based on detailed meteorological data. The ADMS (Atmospheric Dispersion Modelling System) model calculates the dispersion of pollutants on an hourly basis using a year of local meteorological data.

The 2019 meteorological data used in the assessment is derived from London City Airport Meteorological Station. This is the nearest meteorological station, which is considered representative of the application site, with all the complete parameters necessary for the ADMS model. Reference should be made to **Figure 4-2** for an illustration of the prevalent wind conditions at London City Airport Meteorological Station site.

Figure 4-2. London City Airport 2019 Wind Rose



4.3 EMISSION SOURCES

A desktop assessment has identified that traffic movements are likely to be the most significant local source of pollutants affecting the site and its surroundings. The principal traffic derived pollutants likely to impact local receptors are NO_2, PM_{10} and $PM_{2.5}$.

The assessment has therefore modelled all roads within the immediate vicinity of the application site which are considered likely to experience significant changes in traffic flow as a result of the proposed development. Reference should be made to **Figure A-1** for a graphical representation of the traffic data utilised within the ADMS Roads 5.0.0.1 model.

It should be noted that the pollutant contribution of minor roads and rail sources that are not included within the dispersion model is considered to be accounted for via the use of background air quality levels.

4.4 SENSITIVE RECEPTORS

Receptors that are considered as part of the air quality assessment are primarily those existing receptors that are situated along routes predicted to experience significant changes in traffic flow as a result of the proposed development during the construction phase.

The existing receptor locations are summarised in **Table 4-4** and the spatial locations of all of the receptors are illustrated in **Figure 4-3**.

Table 4-4. Modelled Sensitive Receptor Locations

Existing Sensitive Receptor		X	Y	Receptor Height (m)
R1	Residential Receptor on Shaftesbury Avenue 1	529970	181076	4.5
R2	Residential Receptor on New Compton Street	529985	181185	4.5
R3	Residential Receptor on St Giles High Street	530011	181282	4.5
R4	Residential Receptor on Charing Cross Road 2	529880	181178	4.5
R5	Residential Receptor on Phoenix Street 1	529911	181155	4.5
R6	Residential Receptor on Shaftesbury Avenue 3	530062	181215	4.5
R7	Residential Receptor on Charing Cross Road 1	529889	181086	4.5
R8	Residential Receptor on Shaftesbury Avenue 2	530003	181121	4.5
All receptors identified above are located in an AQMA				

Eight existing sensitive receptors have been assessed to determine the effect of air quality, associated with the proposed development. The locations of the receptor are identified on **Figure 4-3**.

4.5 ECOLOGICAL RECEPTORS

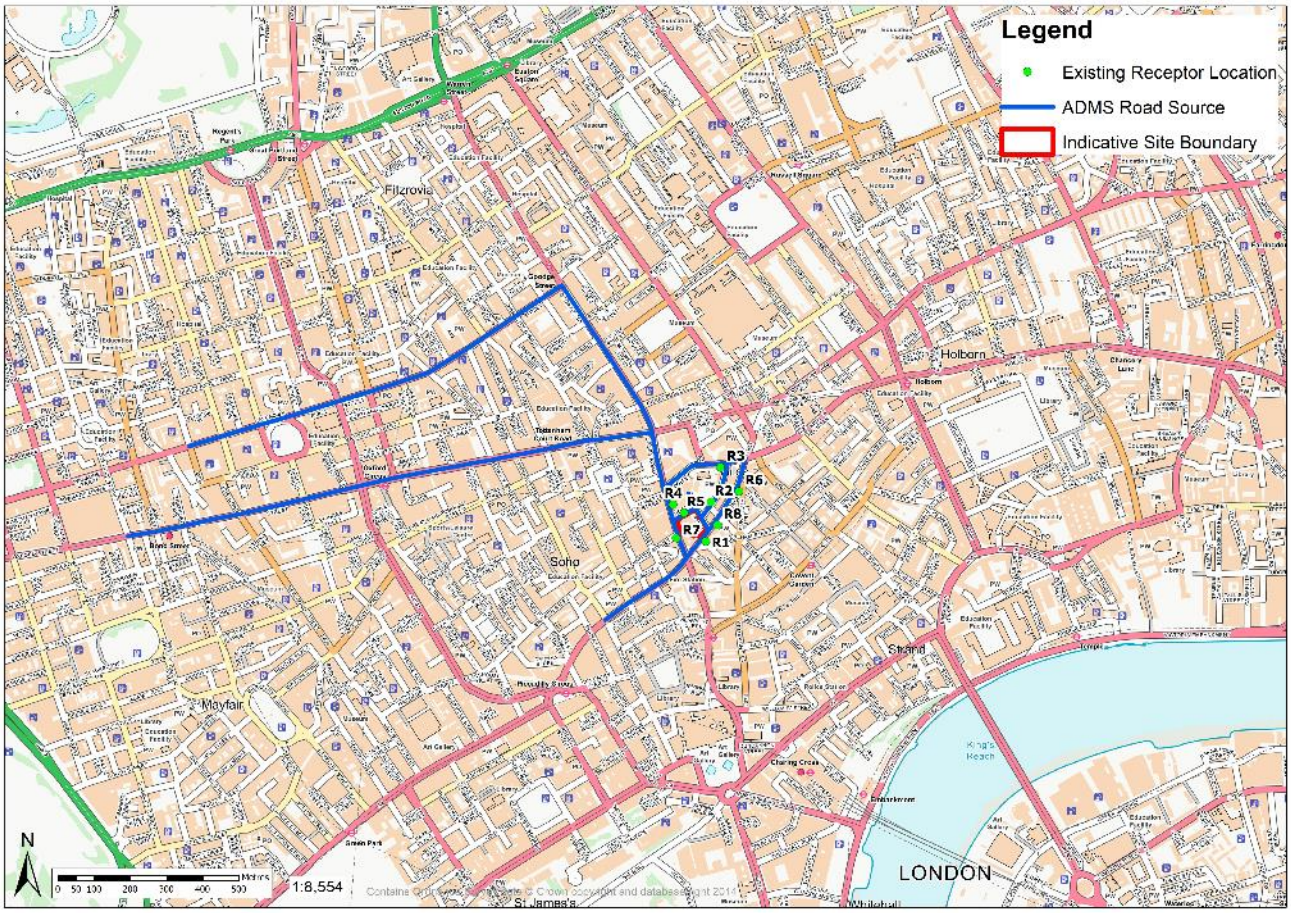
Air quality impacts associated with the proposed development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The IAQM guidance on ‘Air Quality Impacts on Designated Nature Conservation Sites’ (2020) outlines the types of designated nature sites within 2 km of the proposed development which require air quality assessment. These are inclusive of;

- Sites of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Ramsar Sites;
- Areas of Special Scientific Interest (ASSIs);
- National Nature Reserves (NNRs);
- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWSs); and,
- Areas of Ancient Woodland (AW).

The Conservation of Habitats and Species Regulations (2019) additionally requires competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations. Following a search within a 2 km radius of the site boundary, no ecological receptors were identified.

Figure 4-3. Sensitive Receptor Locations



5.0 ASSESSMENT OF AIR QUALITY IMPACTS - CONSTRUCTION DUST ASSESSMENT

5.1 POLLUTANT SOURCES

The main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months) or from construction materials. The main potential effects of dust and particulate matter are:

- Visual - dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and,
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Construction activities can give rise to short-term elevated dust/PM_{10} concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

5.2 PARTICULATE MATTER (PM_{10})

The UK Air Quality Standards seek to control the health implications of respirable PM_{10}. However, the majority of particles released from construction will be greater than this in size.

Construction works on site have the potential to elevate localised PM_{10} concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

5.3 DUST

Particles greater than 10 µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. Although there are no formal standards or criteria for nuisance caused by deposited particles, the IAQM 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites' (October 2018) and the Environment Agency Technical Guidance Note (TGN) M17 states that dust is usually compared with a 'complaints likely' guideline of 200 mg/m^2/day. Therefore, a deposition rate of 200 mg/m^2/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

Construction activities have the potential to suspend dust, which could result in annoyance of residents surrounding the site. Measures will be taken to minimise the emissions of dust as part of good site practice.

Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in the following sections.

5.4 METHODOLOGY

The construction phase assessment utilises the IAQM Guidance on the Assessment of Dust from Demolition and Construction document published in January 2024.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the impact description of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst case impacts. A full explanation of the methodology is contained in Appendix B.

5.5 ASSESSMENT RESULTS

Based on the methodology detailed in Appendix B, the scale of the anticipated works has determined the potential dust emission magnitude for each process, as presented in the **Table 5-1** below.

Table 5-1. Dust Emission Magnitude

Construction Process	Site Criteria	Dust Emission Magnitude
Demolition	Total Building Volume to be Demolished to be between 12,000 m^3-75,000 m^3 (Approximately 19,600 m^3)	Medium
Earthworks	Total Site Area to be <18,000 m^2	Small
Construction	Total Building Volume to be Constructed to be between 12,000 m^3-75,000 m^3	Medium
Trackout	Average between 20-50 HDV outward movements in any one day	Medium

The sensitivity of the surrounding area to each construction process has been determined following stage 2B of the IAQM guidance. The assessment has determined the area sensitivities as shown in the **Table 5-2**.

The sensitivity of the ecological receptors is considered not applicable within the construction phase assessment due ecological receptors previously being scoped out of the assessment.

Table 5-2. Sensitivity of the Area

Source	Area Sensitivity					
	Dust Soiling	Site Sensitivity Criteria	Health Effects of PM_{10}	Site Sensitivity Criteria	Ecological	Site Sensitivity Criteria
Demolition	High	10-100 Highly Sensitive Receptors within 20 m of site	Low	Annual Mean of <24 µg/m^3 for PM_{10} 10-100 Highly Sensitive Receptors within 20 m of site	N/A	>50 m from site boundary
Earthworks	High		Low		N/A	
Construction	High		Low		N/A	
Trackout	High	10-100 Highly Sensitive Receptors within 20 m of roads within 250 m of site	Low	Annual Mean of <24 µg/m^3 for PM_{10} 10-100 Highly Sensitive Receptors within 20 m of roads within 250 m of site	N/A	>50 m from roads within 250 m from site boundary

The dust emission magnitude determined in **Table 5-1** has been combined with the sensitivity of the area determined in **Table 5-2**, to determine the risk of impacts prior to the implementation of appropriate mitigation measures. The potential impact significance of dust emissions associated with the development, without mitigation, is presented in **Table 5-3**.

Table 5-3. Impact Description of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM_{10}	Ecological
Demolition	Medium	Low	N/A
Earthworks	Medium	Negligible	N/A
Construction	Medium	Low	N/A
Trackout	Medium	Low	N/A

Appropriate mitigation measures are detailed and presented in Section 8.0. Following the adoption of these measures, the subsequent impact significance of the construction phase is not predicted to be significant.

6.0 ASSESSMENT OF AIR QUALITY IMPACTS - CONSTRUCTION PHASE

Due to the fact that the scheme is a car-free development, the predicted change in traffic flows during the operational phase does not exceed the EPUK/IAQM 'Land-Use Planning and Development Control: Planning for Air Quality' indicative scoping criteria for air quality assessment at locations within an AQMA. Therefore, a quantitative dispersion modelling assessment for the operational phase has been scoped out.

However, the predicted change in the HDV traffic flows during the construction phase exceeds the above-mentioned scoping criteria for air quality assessment at locations within an AQMA in **Table 3-1**. As such, a quantitative dispersion modelling assessment will be undertaken for the construction phase.

In the context of the proposed development, road traffic stemming from the movement of construction vehicles is identified as the dominant emission source that is likely to cause potential risk of exposure of air pollutants at receptors.

The traffic assessment therefore consists of the quantified predictions of the change in NO_2, PM_{10} and $PM_{2.5}$ for the construction phase of the development due to changes in Heavy Duty Vehicle (HDV) traffic movements. Predictions of air quality at the site have been undertaken for the operational phase of the development using ADMS Roads.

In accordance with the provided traffic data and confirmation of development plans, the peak construction phase is 2027. However, 2025 has been used as the year for future scenarios, which represents a conservative worst-case approach. 2025 is seen to be a worst-case scenario compared to 2027 as a result of the continued electrification of vehicles and improvements in emission rates between the UK fleet of cars between the two years.

The assessment scenarios are therefore:

- 2019 Baseline = Existing Baseline Conditions;
- 2025 'Do Minimum' = Baseline Conditions + Committed Development Flows (through local growth factor); and,
- 2025 'Do Something' = Baseline Conditions + Committed Development Flows (through local growth factor) + Proposed Development Construction Vehicle movements.

6.1 EXISTING AND PREDICTED TRAFFIC FLOWS

Baseline 2019 traffic data, projected 2025 'Do Minimum' and 'Do Something' traffic data, and average vehicle speeds have been obtained for the construction phase traffic assessment in the form of Annual Average Daily Traffic figures (AADT).

Construction vehicle traffic flows have been provided by Watermann Group for the following roads:

- Stacey Street;
- Phoenix Street;
- St Giles Passage;
- New Compton Street; and,

- Charing Cross Road.

Additionally, baseline 2019 traffic data was downloaded from the Department for Transport (DfT) website, for the following roads:

- Shaftesbury Avenue;
- Oxford Street;
- Tottenham Court Road;
- Goodge Street;
- Mortimer Street; and
- Wigmore Street.

To determine the traffic flows for the 2025 construction traffic emissions assessment 'Do Minimum' traffic flows, a TEMPro factor of 1.0473 has been applied to the 2019 Baseline traffic data.

To calculate the 2025 'Do Something' peak construction year traffic flows, the proposed development traffic flows have been distributed across the model area and have been added onto the 2025 'Do Minimum' scenario flows.

Emission factors for the 2019 baseline and 2025 projected 'Do Minimum' and 'Do Something' scenarios have been calculated using the Emission Factor Toolkit (EFT) Version 12.1 (August 2024).

It is assumed the average vehicle speeds on the local road network in an opening year of 2025 will be broadly the same as the ones in 2019. A 50 m 20 km/h slow down phase is included on each link at every junction and roundabout within the assessment. It should be noted that a large number of roads within LBC and the neighbouring WCC have reduced the speed limits to 20 mph within their respective boroughs. All of the roads within the dispersion model are illustrated in **Figure A-1**. Detailed traffic figures are provided in the **Table 6-1**.

Table 6-1. Traffic Data

Link	Speed (km/h)	2019 Baseline		2025 Do Minimum		2025 Do Something	
		AADT	HDV %	AADT	HDV %	AADT	HDV %
Stacey Street	12	338	0.35	354	0.35	398	11.40
Stacey Street (South of New Compton)	12	840	1.32	880	1.32	924	6.00
Phoenix Street	10	232	1.20	243	1.20	287	16.30
St Giles Passage	10	128	0.00	134	0.00	178	24.70
Shaftesbury Avenue East of A400	20	15,271	3.37	15,993	3.37	16,037	3.60
Shaftesbury Avenue West of A400	20	17,814	1.93	18,657	1.93	18,701	2.20
New Compton Street	15	645	0.54	676	0.54	720	6.60
New Compton Street (East of St Giles Passage)	15	668	0.50	700	0.50	744	6.40
St Giles High Street	20	10,004	2.50	10,477	2.50	10,521	2.90
Charing Cross Road	20	6,690	19.14	7,006	19.14	7,050	19.60
Oxford Street	10	10,237	2.00	10,721	2.00	10,765	2.40
Tottenham Court Road	20	7,829	3.24	8,199	3.24	8,243	3.80
Goodge Street	20	6,264	3.30	6,560	3.30	6,604	3.90
Mortimer Street	20	11,917	2.01	12,481	2.01	12,525	2.30

Wigmore Street	20	15,534	1.60	16,269	1.60	16,313	1.90

6.2 BACKGROUND CONCENTRATIONS

The use of background concentrations within the modelling process ensures that pollutant sources other than traffic are represented appropriately. Background sources of pollutants include industrial, domestic and rail emissions within the vicinity of the study site. Several sources have been used to obtain representative background levels as discussed below.

The background concentrations used within the assessment have been determined with reference to the IAQM Guidance and Technical Guidance (TG(22)).

The IAQM Guidance states:

> "*A matter of judgement should take into account the background and future background air quality and whether it is likely to approach or exceed the value of the AQO.*"

Additionally, TG(22) states:

> "*Typically, only the process contributions from local sources are represented within an output by the dispersion model. In these circumstances, it is necessary to add an appropriate background concentration(s) to the modelled source contributions to derive the total pollutant concentrations.*"

Defra Published Background Concentrations for 2019

The background concentrations shown in **Table 6-2** were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the application site. In August 2020, Defra issued revised 2018 based background maps for nitrogen oxide (NO_X), NO_2, PM_{10} and $PM_{2.5}$.

Table 6-2. Published Background Air Quality Levels (µg/m^3)

Receptor Location		2019			
		NO_X	NO_2	PM_{10}	$PM_{2.5}$
Proposed Site					
529931	181125	74.56	41.15	20.10	13.11
Local Authority Monitoring					
WCC26		65.96	38.24	20.41	13.60
CavSq		68.37	38.95	20.33	13.27
Existing Sensitive Receptors					
R1		73.28	40.73	19.48	12.76
R2		73.28	40.73	19.48	12.76
R3		73.28	40.73	19.48	12.76
R4		73.28	40.73	19.48	12.76
R5		73.28	40.73	19.48	12.76
R6		73.28	40.73	19.48	12.76
R7		73.28	40.73	19.48	12.76
R8		73.28	40.73	19.48	12.76
All receptors are located within an AQMA					

All the Defra background concentrations detailed in **Table 6-2** for 2019, show that the background levels are predicted to be below the relevant AQO within the study area.

A breakdown of the background source apportionment of NO_X concentrations at each monitoring location and receptor is shown in **Table 6-3**.

Table 6-3. Pollutant Source Apportionment of NO_X (µg/m^3)

Receptor Location	2022						
	Total NO_x	% of NO_X from Road Sources	% of NO_X from Industrial Sources	% of NO_X from Domestic Sources	% of NO_X from Aircraft Sources	% of NO_X from Rail Sources	% of NO_X from Other Sources
Local Authority Monitoring							
WCC26	74.56	30.92	8.76	42.48	0.01	0.73	17.10
CavSq	68.37	35.11	8.87	37.00	0.01	0.98	18.03
Existing Sensitive Receptors							
R1	74.56	30.92	8.76	42.48	0.01	0.73	17.10
R2	74.56	30.92	8.76	42.48	0.01	0.73	17.10
R3	83.10	29.17	7.10	47.97	0.01	0.55	15.20
R4	74.56	30.92	8.76	42.48	0.01	0.73	17.10
R5	74.56	30.92	8.76	42.48	0.01	0.73	17.10
R6	83.10	29.17	7.10	47.97	0.01	0.55	15.20
R7	74.56	30.92	8.76	42.48	0.01	0.73	17.10
R8	83.10	29.17	7.10	47.97	0.01	0.55	15.20
All receptors are located within an AQMA							

Table 6-3 shows that the major background source of NO_X at the monitoring, sensitive receptor locations where sources have been identified are mainly comprised of road sources.

A review of the Defra background site has determined that they are in line with the Local Authority monitoring within LBC and WCC. **Table 6-4** shows the background concentrations utilised within the assessment.

Table 6-4. Utilised Background Concentrations (µg/m^3)

Receptor Location	2019		Source
	NO_x	NO_2	
Local Authority Monitoring			
WCC26	65.96	38.24	Defra Background Maps
CavSq	68.37	38.95	
Existing Sensitive Receptors			
R1	73.28	40.73	Defra Background Maps
R2	73.28	40.73	
R3	73.28	40.73	
R4	73.28	40.73	
R5	73.28	40.73	
R6	73.28	40.73	
R7	73.28	40.73	
R8	73.28	40.73	
All receptors are located within an AQMA			

6.3 MODEL VERIFICATION

Model verification involves the comparison of modelled data to monitored data in order to gain the best possible representation of current pollutant concentrations for the assessment years. The verification process is in general accordance with that contained in Section 7 of the TG (22) guidance note and uses the most recently available diffusion tube monitoring data to best represent this. When using modelling techniques to predict concentrations, it is necessary to make a comparison between the modelling results and available roadside monitoring data, to ensure that the model is reproducing actual observations. Where systematic bias is evident in the base year verification, the modelled results are factored to better match the monitoring data and reduce the overall uncertainty in the model predictions. TG (22) (Section 'Model Validation, Verification, Adjustment and Uncertainty', Paragraphs 7.549-7.578) was followed when undertaking the verification.

The verification process consists of using the monitoring data and the published background air quality data in the UK National Air Quality Information Archive to calculate the road traffic contribution of NO_X at the monitoring locations. Outputs from the ADMS Roads model are provided as predicted road traffic contribution NO_X emissions. These are converted into predicted roadside contribution NO_2 exposure at the relevant receptor locations based on the updated approach to deriving NO_2 from NO_X for road traffic sources published in Local Air Quality Management TG (22). The calculation was derived using the NO_X to NO_2 worksheet in the online LAQM tools website hosted by Defra. **Table 6-5** summarises the final model/monitored data correlation following the application of the model correction factor.

Table 6-5. Comparison of Roadside Modelling & Monitoring Results for NO_2

Monitoring Site	NO_2 µg/m^3		
	Monitored NO_2	Modelled NO_2	Difference (%)
WCC26	51.00	48.87	-4.17
CavSq	50.00	51.76	3.53
All receptors are located within an AQMA			

The final model produced data at the monitoring locations to within 10% of the monitoring results at all of the verification points, as recommended by TG (22) guidance.

WCC26 monitoring location recorded the highest concentration of NO_2 of 51.00 µg/m^3. Therefore, during the verification process additional focus has been given to this monitoring location as it is worst-case.

The final verification model correlation coefficient (representing the model uncertainty) is 1.00. This was achieved by applying a model correction factor of 3.09 to roadside predicted NO_X concentrations before converting to NO_2. This figure demonstrates that the model predictions were in line with the road traffic emissions at the monitoring locations.

It should be noted that TG (22) states that in the absence of any Particulate Matter (PM_{10} and $PM_{2.5}$) monitoring data for verification, it may be appropriate to apply the NO_X-NO_2 adjustment factor to the modelled Particulate Matter.

TG (22) also states that care needs to be taken when applying model adjustment based on one monitoring site only as the adjustment may not be representative of other locations.

As there is no suitable PM_{10} or $PM_{2.5}$ monitoring data within the study area, it is not possible to perform a model verification for these pollutants. As such, the NO_2 adjustment factor has also been applied to the PM_{10} and $PM_{2.5}$ modelled results, in accordance with LAQM.TG (22).

6.4 ADMS-ROADS MODEL INPUTS

Table 6-6. Summary of ADMS Roads Model Inputs

Parameter	Description	Input Value
Chemistry	A facility within ADMS-Roads to calculate the chemical reactions in the atmosphere between Nitric Oxide (NO), NO_2, Ozone (O_3) and Volatile organic compounds (VOCs).	No atmospheric chemistry parameters included
Meteorology	Representative meteorological data from a local source	**London City Airport 2019 Meteorological Station**, hourly sequential data
Surface Roughness	A setting to define the surface roughness of the model area based upon its location.	**1.5m** representing a typical surface roughness for **Large Urban Areas** was used for the Site as well as the met. Measurement site.
Latitude	Allows the location of the model area to be set	United Kingdom = **51.5**
Monin-Obukhov Length	This allows a measure of the stability of the atmosphere within the model area to be specified depending upon its character.	Cities and Large Towns= **30m** was used for the Site as well as the met. Measurement site.
Elevation of Road	Allows the height of the road link above ground level to be specified.	All other road links were set at ground level = **0m**.
Road Width	Allows the width of the road link to be specified.	Road width used depended on data obtained from OS map data for the specific road link
Topography	This enables complex terrain data to be included within the model in order to account for turbulence and plume spread effects of topography	No topographical information used
Time Varied Emissions	This enables daily, weekly or monthly variations in emissions to be applied to road sources	No time varied emissions used
Road Type	Allows the effect of different types of roads to be assessed.	**Urban (London)** settings were used for the relevant links
Road Speeds	Enables individual road speeds to be added for each road link	Based on national speed limits and speeds provided by the derived from the London Atmospheric Emissions Inventory
Canyon Height	Allows the model to take account turbulent flow patterns occurring inside a street with relatively tall buildings on both sides, known as a 'street canyon'.	No canyons used within the model
Road Source Emissions	Road source emission rates are calculated from traffic flow data using the in-built EFT database of traffic emission factors.	The **EFT** Version **12.1 (2024)** dataset was used.
Year	Predicted EFT emissions rates depend on the year of emission.	**2019** data for verification and baseline Construction Phase Traffic Assessment. **2025** data for the Peak Construction Phase Traffic Assessment.

6.5 ADMS MODELLING RESULTS

6.5.1 Traffic Assessment

The ADMS Model has predicted concentrations of NO_2, PM_{10} and $PM_{2.5}$ at relevant receptor locations adjacent to roads likely to be affected by the development, as summarised in the following tables. Only receptors close to roads where there is predicted to be a change in emissions have been assessed.

6.5.2 Assessment Scenarios

For the operational year of 2025, assessment of the effects of emissions from the proposed traffic associated with the scheme, has been undertaken using the Emissions Factor Toolkit (EFT) 2025 emissions rates which take into account the rate of reduction in emissions from road vehicles into the future with the following factors:

- 2019 Baseline = Existing Baseline conditions;
- 2025 'Do Minimum' = 2025 Baseline + Committed Development Flows (through local growth factor); and,
- 2025 'Do Something' = 2025 Baseline + Committed Development Flows (through local growth factor) + Peak Construction Traffic Flows.

6.5.3 Peak Construction Traffic Assessment

Nitrogen Dioxide

Table 6-7 presents a summary of the predicted change in NO_2 concentrations at relevant receptor locations, due to changes in traffic flow associated with the proposed development, based on modelled 'Do Minimum' and 'Do Something' scenarios.

Table 6-7. Predicted Annual Average Concentrations of NO_2 at Receptor Locations

Receptor		NO_2 (µg/m^3)			
		2019 Baseline	2025 Do Minimum	2025 Do Something	Development Contribution
R1	Residential Receptor on Shaftesbury Avenue 1	48.40	43.19	43.23	0.04
R2	Residential Receptor on New Compton Street	44.50	41.91	42.00	0.09
R3	Residential Receptor on St Giles High Street	46.96	42.72	42.76	0.04
R4	Residential Receptor on Charing Cross Road 2	46.79	42.70	42.75	0.05
R5	Residential Receptor on Phoenix Street 1	44.80	42.03	42.11	0.08
R6	Residential Receptor on Shaftesbury Avenue 3	48.55	43.26	43.30	0.04
R7	Residential Receptor on Charing Cross Road 1	46.17	42.49	42.52	0.03
R8	Residential Receptor on Shaftesbury Avenue 2	48.68	43.30	43.35	0.05
Annual Mean AQO		**40 µg/m^3**			

All receptors identified above are located in an AQMA.

All modelled existing receptors are predicted to be above the AQO for NO_2 in both the 'Do Minimum' and 'Do Something' scenarios. This is likely due to very high background NO_2 and NO_x concentrations within the study area.

As indicated in **Table 6-7**, the maximum predicted increase in annual average exposure to NO_2 at any existing receptor, due to changes in traffic movements associated with the proposed development during the peak construction year is likely to be 0.09 µg/m^3 at the residential receptor on New Compton Street (R2).

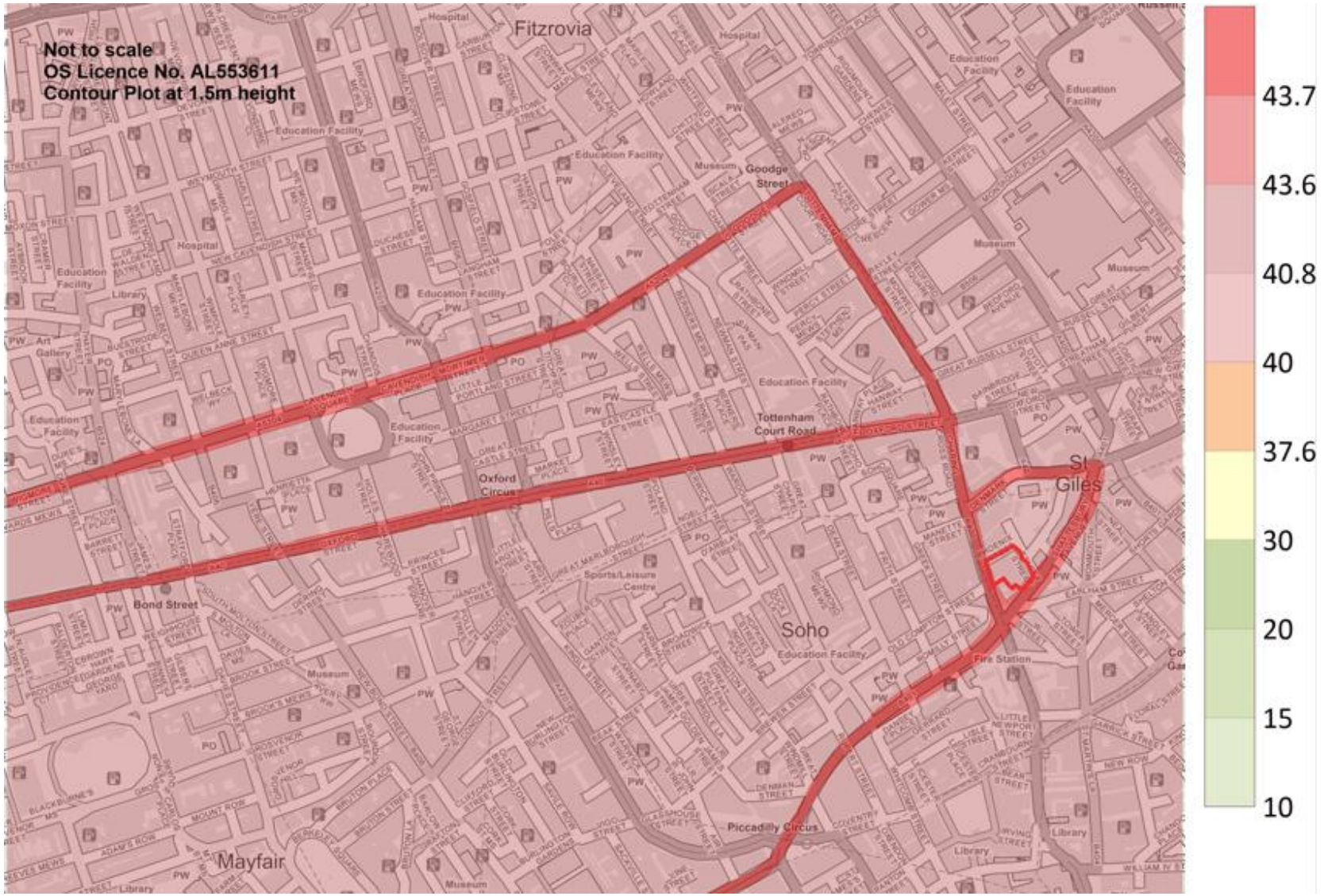
The predicted long-term NO_2 concentrations at all existing receptors are well below 60 µg/m^3 in all scenarios. Therefore, it is unlikely there will be any exceedances for the short-term NO_2 AQO at all modelled receptors as outlined in LAQM TG (22) technical guidance.

Figure 6-1, **Figure 6-2** and **Figure 6-3**, below, illustrate the total long term annual average Nitrogen Dioxide (NO_2) contribution and concentration at the Proposed Development (µg/m^3).

Figure 6-1. Annual Average Long-Term Nitrogen Dioxide (NO_2) Contribution from Proposed Development ($\mu g/m^3$)

Figure 6-2. Total Long Term Annual Average Nitrogen Dioxide (NO_2) Concentration at Proposed Development ($\mu g/m^3$)

Figure 6-3. Total Long Term Annual Average Nitrogen Dioxide (NO_2) Concentration Across the Study Area ($\mu g/m^3$)



The impact description of changes in traffic flow associated with the proposed development with respect to annual mean NO_2 exposure has been assessed with reference to the criteria in Section 3.0. The outcomes of the assessment are summarised in **Table 6-8**.

Table 6-8. Impact Description of Effects at Key Receptors (NO_2)

Impact Description of NO_2 Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**Change due to Development (% of AQO)**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R1	0.04	0.10	0%	103-109 of AQO	Negligible
R2	0.09	0.23	0%	103-109 of AQO	Negligible
R3	0.04	0.10	0%	103-109 of AQO	Negligible
R4	0.05	0.12	0%	103-109 of AQO	Negligible
R5	0.08	0.20	0%	103-109 of AQO	Negligible
R6	0.05	0.10	0%	103-109 of AQO	Negligible
R7	0.03	0.08	0%	103-109 of AQO	Negligible
R8	0.05	0.13	0%	103-109 of AQO	Negligible
+0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
All receptors identified above are located in an AQMA.					

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2 exposure for existing receptors, is determined to be 'negligible' at all modelled receptors. This is based on the methodology outlined in Section 3.0. Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

Particulate Matter (PM_{10})

Table 6-9 presents a summary of the predicted change in annual mean PM_{10} concentrations at relevant receptor locations, due to changes in traffic flow associated with the proposed development during the peak construction year, based on modelled 'Do Minimum' and 'Do Something' scenarios.

Table 6-9. Predicted Annual Average Concentrations of PM_{10} at Receptor Locations

Receptor		PM_{10} (µg/m³)			
		2019 Baseline	2025 Do Minimum	2025 Do Something	Development Contribution
R1	Residential Receptor on Shaftesbury Avenue 1	21.05	20.93	20.95	0.02
R2	Residential Receptor on New Compton Street	20.21	20.14	20.17	0.03
R3	Residential Receptor on St Giles High Street	20.68	20.58	20.60	0.02
R4	Residential Receptor on Charing Cross Road 2	20.52	20.44	20.45	0.01
R5	Residential Receptor on Phoenix Street 1	20.20	20.14	20.16	0.02
R6	Residential Receptor on Shaftesbury Avenue 3	21.11	20.99	21.00	0.01
R7	Residential Receptor on Charing Cross Road 1	20.45	20.37	20.38	0.01
R8	Residential Receptor on Shaftesbury Avenue 2	21.13	21.00	21.02	0.02
Annual Mean AQO		**40 µg/m³**			
All receptors identified above are located in an AQMA.					

All modelled existing receptors are predicted to be below the AQO for PM_{10} in both the 'Do Minimum' and 'Do Something' scenarios.

As indicated in **Table 6-9**, the maximum predicted increase in annual average exposure to PM_{10} at any existing receptor, due to changes in traffic movements associated with the proposed development is 0.03 µg/m³ at the residential receptor on New Compton Street (R2).

The impact description of changes in traffic flow associated with the proposed development with respect to annual mean PM_{10} exposure has been assessed with reference to the criteria in Section 3.0. The outcomes of the assessment are summarised in **Table 6-10**.

Table 6-10. Impact Description of Effects at Key Receptors (PM_{10})

Impact Description of PM_{10} Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m³)	Change due to Development (% of AQO)	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.02	0.05	0%	≤75% of AQO	Negligible
R2	0.03	0.08	0%	≤75% of AQO	Negligible
R3	0.02	0.05	0%	≤75% of AQO	Negligible
R4	0.01	0.02	0%	≤75% of AQO	Negligible
R5	0.02	0.05	0%	≤75% of AQO	Negligible
R6	0.01	0.03	0%	≤75% of AQO	Negligible
R7	0.01	0.02	0%	≤75% of AQO	Negligible
R8	0.02	0.05	0%	≤75% of AQO	Negligible
+0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
Located in the AQMA					

The impact description of the effects of changes in traffic as a result of the proposed development, with respect to annual mean PM_{10} exposure for existing receptors is determined to be 'negligible' based on the methodology

outlined in Section 3.0. Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

Particulate Matter ($PM_{2.5}$)

Table 6-11 presents a summary of the predicted change in annual mean $PM_{2.5}$ concentrations at relevant receptor locations, due to changes in traffic flow associated with the proposed development, based on modelled 'Do Minimum' and 'Do Something' scenarios.

Table 6-11. Predicted Annual Average Concentrations of $PM_{2.5}$ at Receptor Locations

Receptor		$PM_{2.5}$ (µg/m³)			
		2019 Baseline	2025 Do Minimum	2025 Do Something	Development Contribution
R1	Residential Receptor on Shaftesbury Avenue 1	13.63	13.51	13.52	0.01
R2	Residential Receptor on New Compton Street	13.16	13.10	13.12	0.02
R3	Residential Receptor on St Giles High Street	13.43	13.33	13.34	0.01
R4	Residential Receptor on Charing Cross Road 2	13.34	13.26	13.27	0.01
R5	Residential Receptor on Phoenix Street 1	13.16	13.10	13.11	0.01
R6	Residential Receptor on Shaftesbury Avenue 3	13.66	13.54	13.55	0.01
R7	Residential Receptor on Charing Cross Road 1	13.30	13.22	13.23	0.01
R8	Residential Receptor on Shaftesbury Avenue 2	13.67	13.55	13.56	0.01
Annual Mean AQO		**Current AQO = 20 µg/m³, Future AQO after 2040 = 10 µg/m³**			
All receptors identified above are located in an AQMA.					

All modelled existing receptors are predicted to be below the AQO (20 µg/m³) for $PM_{2.5}$ in both the 'Do Minimum' and 'Do Something' scenarios but above the future AQO of 10 µg/m³.

As indicated in **Table 6-11**, the maximum predicted increase in annual average exposure to $PM_{2.5}$ at any existing receptor, due to changes in traffic movements associated with the proposed development is 0.01 µg/m³ across the majority of the receptors except for New Compton Street (R2).

It should be noted that even if the proposed development is assessed against the $PM_{2.5}$ AQO as outlined in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 which introduced the objective of 10 µg/m³ by 2040. Additionally, it should be noted that this assessment utilises a worst-case approach, applying the baseline year background concentrations to the future year scenarios, which assumes there will be no reduction in background concentrations with time. As the Objective is to reduce the concentration of $PM_{2.5}$ to 10 µg/m³ by 2040, and due to the fact that concentrations of air quality pollutants are predicted to reduce with time (with the reduction likely to be accelerated by the introduction of the new AQO), in combination with the mitigation measures outlined with a Travel Plan, and the worst-case assessment methodology, it has been determined that the proposed receptor locations may experience concentrations of $PM_{2.5}$ below the AQO by 2040, and therefore, no further mitigation is required.

The impact description of changes in traffic flow associated with the proposed development with respect to annual mean $PM_{2.5}$ exposure has been assessed with reference to the criteria in Section 3.0. The outcomes of the assessment are summarised in **Table 6-12**.

Table 6-12. Impact Description of Effects at Key Receptors ($PM_{2.5}$)

Impact Description of $PM_{2.5}$ Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**Change due to Development (% of AQO)***	**% Change in Concentration Relative to AQO***	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R1	0.01	0.10	0%	≥110 of AQO	Negligible
R2	0.02	0.20	0%	≥110 of AQO	Negligible
R3	0.01	0.10	0%	≥110 of AQO	Negligible
R4	0.01	0.10	0%	≥110 of AQO	Negligible
R5	0.01	0.10	0%	≥110 of AQO	Negligible
R6	0.01	0.10	0%	≥110 of AQO	Negligible
R7	0.01	0.10	0%	≥110 of AQO	Negligible
R8	0.01	0.10	0%	≥110 of AQO	Negligible
+0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
All receptors identified above are located in an AQMA.					
*Assessed against the future AQO 10µg/m³ as a worst-case scenario					

The impact description of the effects of changes in traffic as a result of the proposed development, with respect to annual mean $PM_{2.5}$ exposure for existing receptors is determined to be ‘negligible’ based on the methodology outlined in Section 3.0. Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be ‘high’.

7.0 AIR QUALITY NEUTRAL

This Air Quality Neutral assessment considers the emissions of atmospheric pollutants from the development at source (i.e. from vehicles and building services plant) and compares the emissions with the benchmark levels that define neutrality.

The requirement for this Air Quality Neutral report is driven by:

- Policy SI 1 in the London Plan. The London Plan states: *"[…] development proposals should be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality*"; and
- The Mayor's Air Quality Strategy (MAQS). The MAQS includes a policy which states that "*New developments in London shall as a minimum be 'air quality' neutral through the adoption of best practice in the management and mitigation of emissions*."

The 'air quality neutral' policy is designed to address the problem of multiple new developments that individually add only a small increment to pollution at the point of human exposure (i.e. ambient concentrations), but cumulatively lead to baseline pollution levels creeping up. The policy requires Developers to design their schemes so that they are at least Air Quality Neutral in terms of emissions at source.

The Greater London Authority (GLA) has adopted a new guidance on Air Quality Neutral Assessments, which supports the London Plan (2021) which altered the approach taken as part of the GLA's Sustainable Design and Construction Supplementary Planning Guidance (SPG), published in April 2014, which provided a formal definition for the term 'air quality neutral' and allowed a transparent and consistent approach to demonstrating whether a development is 'air quality neutral'.

This Air Quality Neutral assessment determines whether the proposed development is air quality neutral using the GLA Air Quality Neutral Guidance (published February 2023) calculation method that separately quantifies building emissions (from heating and power plant) and transport emissions, and introduces a 'damage cost' approach where a development is not determined to be Air Quality Neutral.

7.1 BENCHMARKS

7.1.1 Buildings Emissions Benchmark (BEB)

The GLA Air Quality Neutral Guidance report has defined a Building Emission Benchmarks (BEB) for NO_X for a series of land-use classes. The benchmarks are expressed in terms of g/m^2/annum. The gross internal area (GIA) is used to define the area.

The derived BEBs for NO_X Emissions are shown in **Table 7-1**.

Table 7-1. Building Emissions Benchmark NO_X Emission Rates ($gNO_X/m^2/annum$)

Land Use	Individual Gas Boilers	Gas Boiler Network	CHP + Gas Boiler Network	Heat Pumps + Gas Boiler Network
Residential	3.5	5.7	7.8	5.7
Retail	0.53	0.97	4.31	0.97
Restaurants and bars	1.76	3.23	14.34	3.23
Offices	1.43	2.62	11.68	2.62
Industrial	1.07	1.95	8.73	1.95
Storage and distribution	0.55	1.01	4.5	1.01
Hotel	9.47	15.42	38.16	15.42
Care homes and hospitals	9.15	14.9	36.86	14.9
Schools, nurseries, doctors' surgeries, other non-residential institutions	0.9	1.66	7.39	1.66
Assembly and leisure	2.62	4.84	21.53	4.84

Note 1: These benchmarks have been calibrated for London.

7.1.2 Transport Benchmark Trip Rates (TBTR)

The derived Transport Benchmark Trip Rates (TBTR) are shown in **Table 7-2**.

Table 7-2. Benchmark Trip Rates

Land use	Annual Trips Per	Benchmark Trip Rates		
		CAZ	Inner	Outer
Residential	dwelling	68	114	447
Office / Light Industrial	m2 (GIA)	2	1	16
Retail (Superstore)	m2 (GIA)	39	73	216
Retail (Convenience)	m2 (GIA)	18	139	274
Restaurant / Café	m2 (GIA)	64	137	170
Drinking establishments	m2 (GIA)	0.8	8	N/A
Hot food takeaway	m2 (GIA)	N/A	32.4	590
Industrial	m2 (GIA)	N/A	5.6	6.5
Storage and distribution	m2 (GIA)	N/A	5.5	6.5
Hotels	m2 (GIA)	1	1.4	6.9
Care homes and hospitals	m2 (GIA)	N/A	1.1	19.5
Schools, nurseries, doctors' surgeries, other non- residential institutions	m2 (GIA)	0.1	30.3	44.4
Assembly and leisure	m2 (GIA)	3.6	10.5	47.2

7.2 SUMMARY OF AIR QUALITY NEUTRAL ASSESSMENT

The proposed development will not include installation of CHP or boilers. It has also been confirmed that there will be oil fuelled standby generators and standby sprinkler pumps, both of which have flues to the roof level, however the use of the generators is anticipated to be minimal. It is expected that the maintenance regime of the generators will consist of less than 50 hours of use per year and therefore an assessment of the impacts can be scoped out in accordance with the GLA Air Quality Neutral guidance. The MEP design is based on an all-electric air sourced heat pump system and can therefore be considered to be air quality neutral. The development trip rate is below the benchmark trip rate and therefore the development can be considered Air Quality Neutral for building and transport emissions.

8.0 MITIGATION

8.1 CONSTRUCTION PHASE

The dust risk categories have been determined in Section 5.0 for each of the four construction activities. The assessment has determined that the potential impact description of dust emissions associated with the construction phase of the proposed development is 'medium risk' at the worst affected receptors.

Using the methodology described in Appendix B, appropriate site-specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the 2024 IAQM Guidance Document *'Guidance on the Assessment of Dust from Demolition and Construction*'.

The mitigation measures have been divided into general measures applicable to all sites and measures applicable specifically to demolition, earthworks, construction and trackout. They are categorised into 'highly recommended' and 'desirable' measures.

The mitigation measures for the proposed development are detailed in **Table 8-1** and **Table 8-2**.

Table 8-1. IAQM Guidance on the Assessment of Dust from Demolition and Construction 'Highly Recommended' Mitigation Measures

Communications
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
Display the head or regional office contact information.
Dust Management
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real time PM_{10} continuous monitoring and/or visual inspections.
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
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.
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
Avoid site runoff of water or mud.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, seed or fence stockpiles to prevent wind whipping.
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.
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
Use enclosed chutes and conveyors and covered skips.
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Avoid bonfires and burning of waste materials.
Earthworks
No Action Required.
Construction
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.
Trackout
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
Record all inspections of haul routes and any subsequent action in a site logbook.
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
Access gates to be located at least 10m from receptors where possible.

Table 8-2. IAQM Guidance on the Assessment of Dust from Demolition and Construction 'Desirable' Mitigation Measures

Communications
No Action Required.
Dust Management
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary.
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
Demolition
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
Earthworks
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
Only remove the cover in small areas during work and not all at once.
Construction
Avoid scabbling (roughening of concrete surfaces) if possible.
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Trackout
No Action Required.

Following the implementation of the mitigation measures detailed in the tables above, the impact description of the construction phase is not considered to be significant.

Non-Road Mobile Machinery

All Non-Road Mobile Machinery (NRMM) used on the site shall include CESAR Emissions Compliance Verification (ECV) identification.

All non-road mobile machinery (NRMM) will comply with Stage IIIB NO_X and PM_{10} Emission Standards (or the latest standard if the GLA requirements change) as stated in The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 and its subsequent amendments as a minimum if equal to or over 37kW. Where compliance with Stage IIIB requirements is not achievable or practical, an exemption will be sought from the GLA prior to arrival of the equipment on site and the details recorded

9.0 CONCLUSIONS

Tetra Tech have undertaken an air quality assessment undertaken to assess road traffic emissions and construction dust impacts in support of a planning application for the construction of a new mixed-use development, on the site of the 125 Shaftesbury Avenue within the London Borough of Camden, WC2H 8HR.

Construction Phase

Prior to the implementation of appropriate mitigation measures, the potential impact description of dust emissions associated with the construction phase of the proposed development is 'medium risk' at the worst affected receptors without mitigation. However, appropriate site-specific mitigation measures have been proposed based on Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition, Earthworks, Construction and Trackout. It is anticipated that with these appropriate mitigation measures in place, the risk of adverse effects due to dust emissions from the construction phase will not be significant.

Detailed dispersion modelling of traffic pollutants from the peak construction year has been undertaken for the proposed development. Through confirmation of development plans, the peak construction phase is 2027. However, 2025 has been used as the year for future scenarios, which represents a conservative worst-case approach. The use of 2025 is seen to be a more conservative approach as a result of the continued electrification of vehicles and improvements in emission rates between the UK fleet of cars between the two years.

A peak construction year assessment has been undertaken to assess the effects of the Proposed Development. The impacts during the peak construction phase takes into account exhaust emissions from vehicles associated with the Proposed Development.

The 2025 assessment of the effect of emissions from associated construction vehicles traffic associated with the scheme, has determined that the maximum predicted increase in the annual average exposure to NO_2 at any existing receptor is likely to be 0.09 µg/m^3 on New Compton Street (R2).

For PM_{10}, the maximum predicted increase in the annual average exposure at any existing receptor is likely to be 0.03 µg/m^3 on New Compton Street (R2). For $PM_{2.5}$, the maximum predicted increase in the annual average exposure is likely to be 0.01 µg/m^3 at all receptors except New Compton Street (R2).

The impact description of the effects of changes in traffic flow as a result of the proposed development during the peak construction year, with respect to NO_2, PM_{10} and $PM_{2.5}$ exposure, is determined to be 'negligible' at all existing receptors.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

Operational Assessment

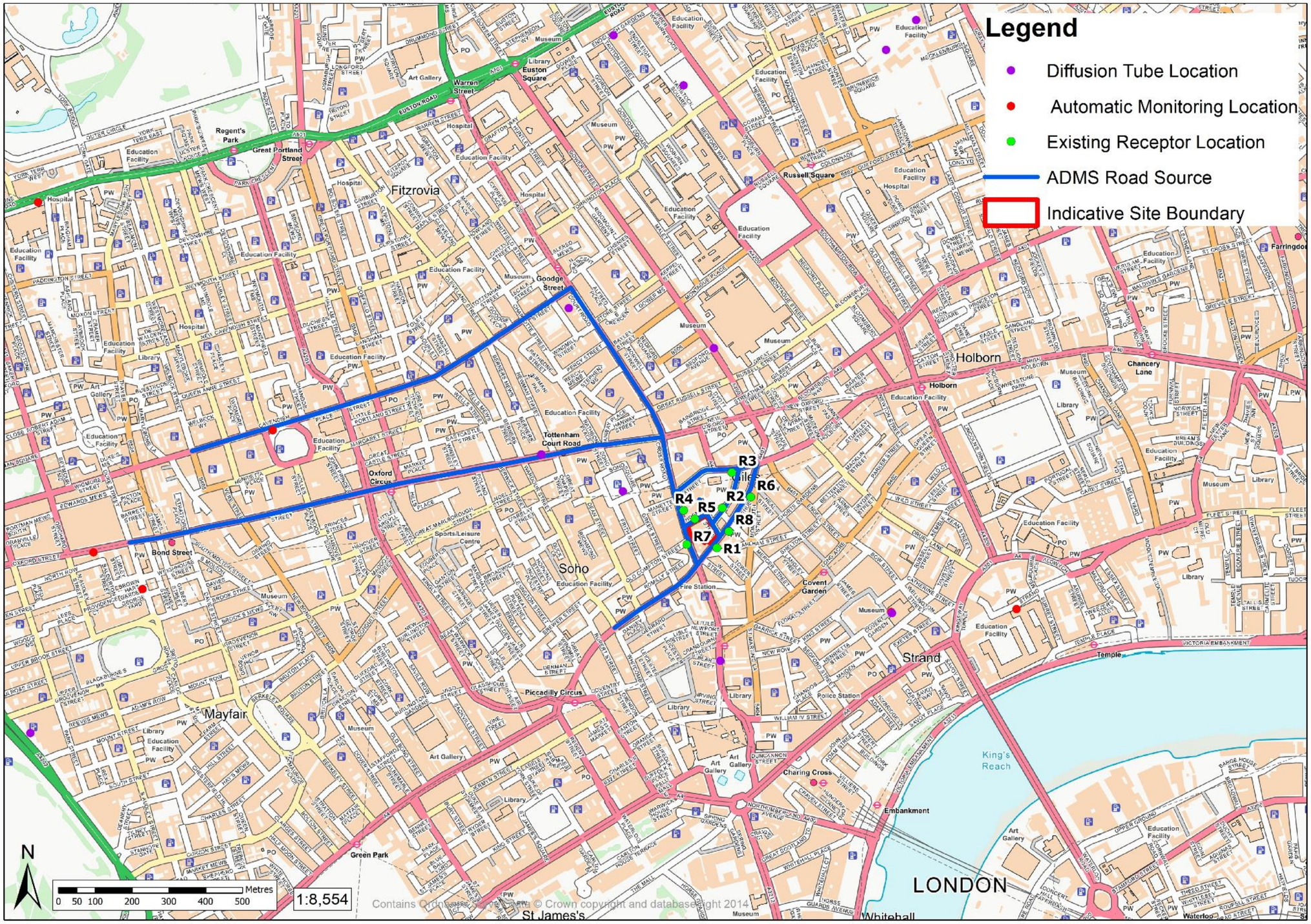
The Proposed Development is anticipated to be car free in nature. As such the predicted change in traffic flows during the operational phase fall below the EPUK/IAQM Land-Use Planning Guidance criteria that trigger a quantitative assessment for locations within AQMAs. Therefore, a detailed dispersion modelling assessment for the operational phase was deemed unnecessary.

It has been confirmed with reference to the energy and sustainability statement for the proposed development will not include installation of CHP or other heat source emissions and can therefore be considered air quality neutral. The development trip rate is below the benchmark trip rate and therefore the development can be considered Air Quality Neutral in relation to building and transport emissions.

In conclusion, the development is not considered to be contrary to any of the national and local planning policies regarding air quality.

APPENDIX A - FIGURES

Figure A-1 Air Quality Assessment Area



APPENDIX B - CONSTRUCTION PHASE ASSESSMENT METHODOLOGY

The following information sets out the adopted approach to the construction phase impact assessment in accordance with the aforementioned IAQM guidance[23].

Step 1 – Screen the Requirement for a more Detailed Assessment

An assessment will normally be required where there is:

- a 'human receptor' within:
  - 250 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- an 'ecological receptor' within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

For specific (high risk) schemes the planning authority may require dust assessment despite the proposed site falling outside the distances above.

Step 2A – Define the Potential Dust Emission Magnitude

Demolition

The dust emission magnitude for the demolition phase has been determined based on the below criteria:

- *Large*: Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;
- *Medium*: Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level; and
- *Small*: Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.

Earthworks

The dust emission magnitude for the planned earthworks has been determined based on the below criteria:

- *Large*: Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;
- *Medium*: Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height; and
- *Small*: Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.

Construction

The dust emission magnitude for the construction phase has been determined based on the below criteria:

- *Large*: Total building volume >75,000 m^3, on site concrete batching, sandblasting;
- *Medium*: Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- *Small*: Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

The dust emission magnitude for trackout has been determined based on the below criteria:

- *Large*: >50 HDV (>3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m;
- *Medium*: 20-50 HDV (>3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m; and
- *Small*: <20 HDV (>3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.

It should be noted that a vehicle movement is a one-way journey. i.e. from A to B, and excludes the return journey. HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

[23] Institute of Air Quality Management 2024. *Guidance on the assessment of dust from demolition and construction version 2.2.*

Step 2B - Defining the Sensitivity of the Area

Sensitivities of People to Dust Soiling Effects

- *High:*
  - users can reasonably expect enjoyment of a high level of amenity;
  - the appearance, aesthetics or value of their property would be diminished by soiling;
  - the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land;
  - indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.
- *Medium:*
  - users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;
  - the appearance, aesthetics or value of their property could be diminished by soiling;
  - the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land;
  - indicative examples include parks and places of work.
- *Low:*
  - The enjoyment of amenity would not reasonably be expected;
  - property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling;
  - there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land;
  - indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table B-1. Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Note - For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Sensitivities of People to the Health Effects of PM_{10}

- *High:*
  - locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
  - indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
- *Medium:*
  - locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
  - indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.
- *Low:*
  - locations where human exposure is transient.
  - indicative examples include public footpaths, playing fields, parks and shopping streets.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table B-2. Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m³ (>18 µg/m³ in Scotland)	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28 – 32 µg/m³ (16 – 18 µg/m³ in Scotland)	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24 – 28 µg/m³ (14 – 16 µg/m³ in Scotland)	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³ (<14 µg/m³ in Scotland)	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m³ (>18 µg/m³ in Scotland)	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28 – 32 µg/m³ (16 – 18 µg/m³ in Scotland)	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24 – 28 µg/m³ (14 – 16 µg/m³ in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m³ (<14 µg/m³ in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Note - For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Sensitivities of Receptors to Ecological Effects

- *High:*
  - locations with an international or national designation and the designated features may be affected by dust soiling; or • locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain.
  - indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
- *Medium:*
  - locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • locations with a national designation where the features may be affected by dust deposition.
  - indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
- *Low:*
  - locations with a local designation where the features may be affected by dust deposition.
  - indicative example is a local Nature Reserve with dust sensitive features.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table B-3. Sensitivity of the Area to Ecological Impacts

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

Note - For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Step 2C - Defining the Risk of Impacts

The risk of impacts with no mitigation is determined by combining the dust emission magnitude determined in Step 2A and the sensitivity of the area determined in Step 2B.

The following tables provide a method of assigning the level of risk for each activity.

Demolition

Table B-4. Risk of Dust Impacts, Demolition

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

Earthworks

Table B-5. Risk of Dust Impacts, Earthworks

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

Construction

Table B-6. Risk of Dust Impacts, Construction

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

Trackout

Table B-7. Risk of Dust Impacts, Trackout

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

Step 3 – Site Specific Mitigation

The dust risk categories for each of the four activities determined in Step 2C should be used to define the appropriate, site-specific mitigation measures to be adopted.

These mitigation measures are contained within section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction.