

105 Judd Street, Camden, London WC1H 9NE



Air Quality Assessments

784-B050553 11th April 2025

PRESENTED TO

105 Judd Street Ltd

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DOCUMENT CONTROL

Document:	Air Quality Assessment
Project:	105 Judd Street, London
Client:	105 Judd Street Ltd
Job Number:	784-B050553
File Origin:	\\lds-dc-vm-101\Data\Projects

Issue:	1	Status:	First Issue	
Date:	11 th April 2025			
Prepared by: Emma Longhurs Senior Environmenta	t I Consultant	Checked by Maria Lopez Ve Principal Environme	era ental Consultant	Approved By: Matthew Smith Associate Environmental Consultant

TRAFFIC AIR QUALITY ASSESSMENT

The 2022 Air Quality Assessment in Appendix A presents the findings of an air quality assessment undertaken to assess road traffic emissions in relation to the laboratory-enabled offices at the basement, ground, first, second, third and fourth floors and creation of additional fifth & sixth floors at 105 Judd Street, Camden, WC1H 9NE.

This report focuses on the air quality from vehicle movements, arriving and departing the proposed development and the effects of dust and particulate emissions from site activities and materials movement associated with the construction and operational phases of the proposed scheme.

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.

Operational Phase – Traffic

The 2022 assessment of the effect of emissions from 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 0.02 µg/m³ at 103 Judd Street (R7), 305 Judd Street (R8), and Cambria House 37 Hunter Street (R9).

The predicted long-term NO₂ concentrations at all proposed receptors are well below 60 μ g/m³ in all scenarios. Therefore, it is unlikely there will be any exceedances for the short-term NO₂ AQO at all proposed receptors as outlined in LAQM TG16 technical guidance, and therefore no additional mitigation is required.

For PM₁₀, the maximum predicted increase in the annual average exposure is likely to be 0.01 μ g/m³ at 305 Judd Street (R8) and 200 Pentonville Road (R19). For PM_{2.5}, the maximum predicted increase in the annual average exposure is likely to be 0.01 μ g/m³ at 74 Marchmont Street (R6).

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO₂, PM₁₀ 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'.

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

Air Quality Assessment (Fumes)

The impact of the proposed fume cupboard exhaust emissions from the flues on the surrounding environment, during the operational phase only, have been assessed. The impact of the emissions were assessed using air dispersion modelling to determine the additional exposures of identified pollutants at key receptors, and to determine the magnitude of the long-term and short-term exposures of pollutants from those emission sources.

Operational Phase – Fumes

There will be 3 fume cupboard extract fans serving the fume cupboards. Two fans will be in operation at a time and one fan is a standby. The peak fume extract air volume for each fan is $3m^3/s$.

The baseline air quality conditions have been defined.

AERMOD modelling has been undertaken using the most representative meteorological dataset. The worstcase and highest predicted long-term and short-term PECs have been compared to the appropriate AQOs/ EALs, Camden Interim Pollution Targets (CIPT), or relevant impact assessment criteria.

The relevant CIPTs used in the assessment are as follows:

- Camden Interim Pollution Target of 20 µg/m³ of NO₂ annual mean concentration to be achieved in 2030;
- Camden Interim Pollution Target of 15 $\mu g/m^3$ of PM_{10} annual mean concentration to be achieved in 2030; and
- Camden Interim Pollution Target of 10 µg/m³ of PM_{2.5} annual mean concentration to be achieved in 2030.

The air quality impacts from particulate matter, nitrogen dioxide and benzene emissions have been assessed.

<u>Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀ and PM_{2.5}) Emission Impacts and Their Emission</u> Limit/Threshold

Considering that (1) the annual NO₂ background concentrations are already above the air quality objective of $40 \ \mu g/m^3$ and Camden Interim Pollution Target of $20 \ \mu g/m^3$ to be achieved in 2030 at the receptors surrounding the site, and (2) London Borough of Camden have set up Interim Pollution Targets for PM₁₀ and PM_{2.5}, the sensitivity modelling assessment has been purposely undertaken to establish the emission limits for NO_x, PM₁₀ and PM_{2.5} in order to ensure that the effects of the NO₂, PM₁₀ and PM_{2.5} impacts on the surrounding receptors will be insignificant.

The identified emission limits for NO_x and PM_{10} are:

- 100 kg NO_x per year for the laboratory operation or equivalent to 0.000528 g/s of NO_x emission rate for each flue. The emission limit was established to meet the Camden Interim Pollution Targets of 20 µg/m³ to be achieved in 2030;
- 36 kg PM₁₀ per year for the laboratory operation or equivalent to 0.00019 g/s of PM₁₀ emission rate for each flue. The emission limit was established to meet the Camden Interim Pollution Targets of 15 µg/m³ to be achieved in 2030; and

 36 kg PM_{2.5} per year for the laboratory operation or equivalent to 0.00019 g/s of PM_{2.5} emission rate for each flue. The emission limit was established to meet the Camden Interim Pollution Targets of 10 µg/m³ to be achieved in 2030.

The predicted long-term NO₂, PM₁₀, PM_{2.5} concentrations at the receptor locations from the operation of the laboratory under the identified emission limits are all below the relevant Camden Interim Pollution Targets for NO₂, PM₁₀ and PM_{2.5} for the protection of human health. The long-term impacts (based on the above emission limits) are determined to be 'negligible' and the effects of the facility operations on the local area is considered to be insignificant.

The predicted short-term NO_2 and PM_{10} concentrations at the receptor locations from the operation of the laboratory under the identified emission limits are all below the relevant AQOs for the protection of human health. The short-term impacts are determined to be 'negligible' and the effects of the facility operations on the local area is considered to be insignificant.

The predicted long-term benzene concentrations at the receptor locations from the operation of the laboratory exhausts are all below the relevant AQOs for the protection of human health. The long-term impacts are determined to be 'negligible' and the effects of the facility operations on the local area is considered to be insignificant.

Habitat Assessment

The annual mean NO_x PEC at the ecological receptors from laboratory operations are above the relevant critical level for the protection of vegetation and Ecosystems. However, the percentage change in long-term process concentrations relative to the AQAL are determined to be 0.004% or less. The effects of NO_x impacts on the ecological receptors are insignificant.

The NO_x daily (24 hour) predicted environmental concentrations at all ecological receptor locations are below the daily mean critical levels of 75 μ g/m³ for the protection of vegetation and Ecosystems.

The process contribution (PC, as predicted) from laboratory operations is well below 0.5% of the relevant critical level or load (CL) and it can be considered inconsequential.

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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
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
SSSI	Sites of Special Scientific Interest
VOC	Volatile organic compounds
WHO	World Health Organization
UK	United Kingdom

APPENDIX A – TRAFFIC AIR QUALITY ASSESSMENT 2022



105 Judd Street, Camden, London WC1H 9NE



Air Quality Assessment

784-B030322 4th March 2022

PRESENTED TO

105 Judd Street Ltd

PRESENTED BY

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DOCUMENT CONTROL

Document:	Air Quality Assessment
Project:	105 Judd Street, London
Client:	105 Judd Street Ltd
Job Number:	784-B030322
File Origin:	O:\Acoustics Air Quality and Noise\Fee Earning Projects

Issue:	1	Status:	First Issue	
Date:	21 st October 2021			
Prepared by: Donald Towler-T Environmental Scient	inlin tist	Checked by Matthew Smith Principal Environme	ental Consultant	Approved By: Nigel Mann Director

Issue:	2	Status:	Second Issue	
Date:	9 th November 2021			
Prepared by: Donald Towler-Tinlin Environmental Scientist		Checked by Matthew Smith Principal Environmental Consultant		Approved By: Nigel Mann Director
Description of revision: Minor Amendments				

Issue:	3	Status:	Third Issue	
Date:	4 th March 2022			
Prepared by: Zayn Dubois Gafar Environmental Consultant		Checked by Matthew Smith Principal Environme	ental Consultant	Approved By: Nigel Mann Director
Description of r Minor Amendme	evision: nts			

EXECUTIVE SUMMARY

This report presents the findings of an air quality assessment undertaken to assess road traffic emissions in relation to conversion to combined laboratory-enabled offices at the basement, ground, first, second, third and fourth floors and creation of additional set-back fifth & sixth floors at 105 Judd Street, Camden, WC1H 9NE.

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, the effects from the construction phase are not predicted to be significant.

Operational Phase

Detailed dispersion modelling of traffic pollutants has been undertaken for the proposed development. An operational year assessment for 2022 traffic emissions has been undertaken to assess the effects of the Proposed Development. The impacts during the operational phase take into account exhaust emissions from additional road traffic generated due to the proposed development.

The long-term (annual) assessment of the effects associated with the proposed development with respect to Nitrogen Dioxide (NO₂) is determined to be 'negligible'. With respect to PM₁₀ and PM_{2.5} exposure, the effect is determined to be 'negligible' at all identified existing sensitive receptor locations.

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ACRONYMS/ABBREVIATIONS

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AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Standards
CHP	Combined Heat and Power
CL	Critical Level
СО	Carbon Monoxide
DEFRA	Department for Environment Food & Rural Affairs
EAL	Environmental Assessment Limits
EC	European Commission
EFT	The Emissions Factors Toolkit
EPUK	Environmental Protection UK
EU	European Union
EPAQS	The Expert Panel on Air Quality Standards
IAQM	The Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NGR	The United Kingdom National Grid Reference
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
PC	Process Contribution
MHCLG	the Ministry for Housing, Communities and Local Government
NPPF	The National Planning Policy Framework
OS	the UK Ordnance Survey
PEC	Predicted Environment Concentration
PPG	Planning Policy Guidance
PPS	Planning Policy Statements
SAC	Special Areas of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
VOC	Volatile organic compounds
WHO	World Health Organization
UK	The United Kingdom

1.0 INTRODUCTION

This report presents the findings of an air quality assessment undertaken to assess road traffic emissions in relation to conversion combined laboratory-enabled offices at the basement, ground, first, second, third and fourth floors and creation of additional set-back fifth & sixth floors at 105 Judd Street, Camden, WC1H 9NE.

1.1 SITE LOCATION

The central Grid Reference is approximately 530128,182665. The application site is bounded in all directions by commercial and residential properties. Reference should be made to **Figure 1-1** for a map of the application site and surrounding area.



Figure 1-1. Satellite Image of Site and Surrounding Area

Google Imagery (2021)

1.2 CONTEXT

The primary source of the air quality 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 sensitive receptors and proposed sensitive receptors.

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

- Baseline 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 (as required).

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 2014.

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 (NO₂) and particulate matter with an aerodynamic diameter of less than 10 μ m (PM₁₀) and less than 2.5 μ m (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: Policy and Legislative Context
- Section 3: Assessment Methodology
- Section 4: Baseline Conditions
- Section 5: Assessment of Air Quality Impacts Construction Phase
- Section 6: Assessment of Air Quality Impacts Operational Phase
- Section 7: Air Quality Neutral Assessment
- Section 8: Mitigation
- Section 9: 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

- National Planning Policy Framework, Ministry for Housing, Communities and Local Government, Revised July 2021;
- Planning Practice Guidance: Air Quality, Ministry for Housing, Communities and Local Government, November 2019;
- The Air Quality Standards Regulations (Amendments), 2016;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra, 2007;
- The Environment Act, 1995;
- The Environment Act, 2021;
- London Local Air Quality Management Technical Guidance LLAQM.TG19, Mayor of London, 2019;
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, LA 105 Air quality, Highways England, November 2019;
- Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, 2017;
- Guidance on the Assessment of Dust from Demolition and Construction, IAQM, 2014;
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.0), IAQM, May 2020;
- Ecological Assessment of Air Quality Impacts, CIEEM, January 2021.
- London Plan Supplementary Planning Guidance (SPG) 'The Control of Dust and Emissions during Construction and Demolition', July 2014;
- Greater London Authority (GLA) London Environment Strategy, May 2018;
- Greater London Authority (GLA) The London Plan, March 2021;
- Greater London Authority, Sustainable Design & Construction Supplementary Planning Guidance, April 2014; and,
- Air Quality Neutral Planning Support Guidance, Greater London Authority, 2014.

Websites Consulted

- Google maps (maps.google.co.uk);
- The UK National Air Quality Archive (www.airquality.co.uk);
- Department for Transport Matrix (www.dft.go.uk/matrix);
- emapsite.com;
- 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/).

Site Specific Reference Documents

- London Borough of Camden, Air Quality CPG (January 2021);
- London Borough of Camden, Clean Air Action Plan 2019-2022 (February 2019);
- London Borough of Camden, Air Quality Annual Status Report for 2019; and,
- London Borough of Camden, Camden Local Plan (Adopted 2017).

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 NO₂ and oxides of nitrogen, sulphur dioxide, lead and PM₁₀;
- **Directive 2000/69/EC** the Second Air Quality 'Daughter' Directive sets ambient air limit values for benzene and carbon monoxide; and,
- 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 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

<u>The Air Quality Standards Regulations</u> (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 <u>Environment Act</u> (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 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.

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	UK	50µg/m ³ by end of 2004 (max 35 exceedances a year)	24-hour Mean	1 st January 2005	50µg/m ³ by end of 2004 (max 35 exceedances a year)	1 st January 2005	Retain
1 1010	UK 40µg/m ³ by end of 2004		Annual Mean	1 st January 2005	40µg/m³	1 st January 2005	Existing
PM _{2.5}	UK	25µg/m³	Annual Mean	31 st December 2010	25µg/m³	1 st January 2010	Retain Existing
NO ₂	UK	200µg/m ³ not to be exceeded more than 18 times a year	1-Hour Mean	31 st December 2005	200µg/m ³ not to be exceeded more than 18 times a year	1 st January 2010	Retain Existing
	UK	40µg/m³	Annual Mean	31 st December 2005	40µg/m³	1 st January 2010	

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

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

Pollutant	Applies	Objective	Concentration Measured as
NO _x	UK	30µg/m³	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/m³, a reduction from the current Air Quality objective of 20 µg/m³ set out within the Air Quality Standards Regulations (Amendment 2016). A draft of a statutory instrument (or drafts of statutory instruments) containing regulations setting the $PM_{2.5}$ air quality target must be laid before Parliament on or before 31st October 2022 and is expected to come into force thereafter.

2.3 PLANNING AND POLICY GUIDANCE

National Policy

The National Planning Policy Framework (NPPF), revised July 2021, principally brings together and summarises the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policy making. The NPPF (para. 186) states that:

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

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 (NH₃);
- nitrogen oxides (NO_x);
- sulphur dioxide (SO₂); 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."

Regional Policy

The London Borough of Camden (LBoC) lies within the Greater London Authority (GLA) Area. The new London Plan addresses the improvement of air quality. Following a review of policies within the new Local 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."

"Policy SI8 Waste capacity and net waste self-sufficiency

E. Developments proposals for new waste sites or to increase the capacity of existing sites should be evaluated against the following criteria:4) the impact on amenity in surrounding areas (including but not limited to noise, odours, air quality and visual impact) – where a site is likely to produce significant air quality, dust or noise impacts, it should be fully enclosed."

"Policy T6.2 Office Parking

D. Outer London boroughs wishing to adopt more generous standards are required to do so through an evidence-based policy in their Development Plan that identifies the parts of the borough in which the higher standards will be applied, and justifies those standards, including:
3) the impact on congestion and air quality locally and on neighboring boroughs and districts outside London as appropriate."

"Policy T8 Aviation

- B. The environmental and health impacts of aviation must be fully acknowledged and aviationrelated development proposals should include mitigation measures that fully meet their external and environmental costs, particularly in respect of noise, air quality and climate change. Any airport expansion scheme must be appropriately assessed and if required demonstrate that there is an overriding public interest or no suitable alternative solution with fewer environmental impacts.
- C. The Mayor will oppose the expansion of Heathrow Airport unless it can be shown that no additional noise or air quality harm would result, and that the benefits of future regulatory and technology improvements would be fairly shared with affected communities."

Local Policy

Following a review of the London Borough of Camden's Camden Local Plan (adopted 2017), the following policy concerning air quality was identified.

"Policy CC4: Air Quality;

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

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

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."

Policy CC4 is supported by the Camden Planning Guidance for Air Quality (January 2021) which provides information on key air quality issues within the borough. The CPG states that:

- "All proposals involving demolition and construction should adopt best practice measures to reduce and mitigate emissions.
- On-site monitoring may be required dependent on the scale of demolition and construction.
- Certain developments using Non Road Mobile Machinery (within the KW range) need to meet standards in the Mayor's Dust and emissions SPD.
- The impact of outdoor air pollution on indoor air quality in new developments needs to be taken into account at the earliest stages of building design.
- Development should take into consideration the location of amenity space and opportunities for appropriate planting 'greening'.
- Development should reduce emissions by being energy efficient (reducing emissions associated with the operation of the building).
- Development should prioritise more sustainable modes of transport and where applicable improve the walking and cycling environment."

3.0 ASSESSMENT METHODOLOGY

The potential environmental effects of the operational phase of the proposed development have been identified as 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*' and May 2020 '*A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*'.

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.

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:

- The change in concentration of air pollutants, air quality effects, are quantified and evaluated in the context of AQOs. 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)';
- The absolute concentrations are also considered in terms of the AQO 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 AQO;
- 3. Severity of the effect is described as qualitative descriptors; negligible, slight, moderate or substantial, by taking into account in combination the harm potential and air quality effect. This means that a small increase at a receptor which is already close to or above the AQO will have higher severity compared to a relatively large change at a receptor which is significantly below the AQO;
- 4. The effects can be adverse when pollutant concentrations increase or beneficial when concentrations decrease as a result of development;
- 5. The judgement of 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 AQO.

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

Table 3-1. Impact Descriptors for Individual Receptors

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.

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)

As required under section 82 of the Environment Act 1995, London Borough of Camden (LBoC) has undertaken an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of NO₂ are above the relevant AQOs at locations of relevant public exposure within the Borough. Therefore, LBoC has designated a boroughwide Air Quality Management Area (AQMA).

The assessments have indicated that concentrations of NO₂ are above the relevant AQOs at one location of relevant public exposure within LBoC that is shown below.

Table 4-1. Local Authority AQMA Details

AQMA	Description	Date Declared	Date Amended	Pollutants Declared
Camden AQMA	An area encompassing the whole borough.	20/09/2002	N/A	Nitrogen Dioxide NO ₂ 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.

Air Quality Monitoring

Monitoring of air quality within LBoC has been undertaken through both automatic and non-automatic monitoring methods in 2019. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the application site. The most recent monitoring data within LBoC was undertaken during 2019.

Automatic Monitoring

LBoC undertook automatic pollution monitoring during 2019 at 4 different locations. The closest monitoring location is CD9, which is located at Euston Road, approximately 227 m west of the application site. The most recently available data is from 2019 which is presented in **Table 4-2**.

Table 4-2. Monitored Annual Mean NO₂ Concentrations at Automatic Monitoring Locations

Site ID	Location	Site Type	Distance from Kerb of Nearest Road (m)	Inlet Height (m)	2019 NO₂ Annual Mean Concentration (µg/m³)	2019 PM₁₀ Annual Mean Concentration (µg/m³)	2019 PM _{2.5} Annual Mean Concentration (µg/m ³)
CD9	Euston Road	Roadside	0.5	2.5	70.0	22.0	14.0

As outlined in **Table 4-2**, the monitoring location monitored annual average NO₂ concentrations above the AQO for NO₂ (40 μ g/m³ annual mean) during 2019.

Non - Automatic Monitoring

London Borough of Camden operates a network of 33 passive diffusion tubes. The closest diffusion tube is diffusion tube CA4A, which is located on Euston Road, approximately 107 m north of the application site. The most recently available diffusion tube data is from 2019 which is presented in **Table 4-3**.

Site ID	Location	Site Type	Distance from Kerb (m)	Inlet Height (m)	Monitored 2019 Annual Mean NO ₂ Concentration (μg/m³)
CA4A (new)	Euston Road	Kerbside	0.5	2.2	69.06
CA27	Euston Road LAQN colocation	Roadside	0.5	2.0	63.81
CA6	St. George's Gardens	Urban Background	30	1.8	24.65
CA28	St. George's Gardens East	Urban Background	29	1.5	27.67
CA10	Tavistock Gardens	Urban Background	25	2.5	33.13
CA29	Endsleigh Gardens	Roadside	0.5	2.0	48.34

Table 4-3. Monitored Annual Mean NO2 Concentrations at Diffusion Tubes

As indicated in **Table 4-3**, three diffusion tubes located within the Air Quality Assessment area monitored annual average NO₂ concentrations above the AQO for NO₂ (40 µg/m³ annual mean) during 2019.

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 NO₂, PM₁₀ 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.

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**.

Existing Se	ensitive Receptor	x	Y	Receptor Height (m)
R1	161 Euston Road	529761	182571	4.0
R2	117 Euston Road	529862	182633	4.0
R3	9 Mabledon Place	529987	182650	4.0
R4	2 Tavistock Place	530005	182312	1.5
R5	101 Marchmont Street	530097	182469	1.5
R6	74 Marchmont Street	530147	182410	1.5
R7	103 Judd Street	530160	182646	1.5
R8	305 Judd Street	530243	182475	1.5
R9	Cambria House 37 Hunter Street	530251	182453	1.5
R10	Selsey Tavistock Place	530323	182511	1.5
R11	Premier Inn Kings Cross	530335	183106	4.0
R12	341 Gray's Inn Road	530356	182957	4.0
R13	2 Saint Chad's Street	530433	182931	4.0
R14	272 Pentonviille Road	530443	183017	4.0
R15	26b Caledonian Road	530448	183088	4.0
R16	44 Caledonian Road	530456	183109	4.0
R17	Travelodge Kings Cross	530473	182925	4.0
R18	Linfield Sidmouth Street	530571	182597	1.5
R19	200 Pentonville Road	530698	183054	4.0
Proposed Sensitive Receptor		X	Y	Receptor Height (m)
PR1	Proposed Receptor	530110	182672	1.5
PR2	Proposed Receptor	530134	182688	1.5
PR3	Proposed Receptor	530157	182649	1.5
PR4	Proposed Receptor	530132	182636	1.5

Table 4-4. Modelled Sensitive Receptor Locations

Four proposed receptors and nineteen 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 re-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, the following ecological receptors were identified:

				GR (m)		Distance from
Site ID	Site	Designation	x	Y	Distance from Site (km)	Nearest Affected Road (m)
E1	Camley Street Nature Park	LNR	530013	183364	0.68	322
E2	Camley Street Nature Park	LNR	529926	183505	0.84	452

Table 4-5. Ecological Sensitive Receptor Locations

It should be noted that the IAQM Guidance only requires the assessment of ecological receptors which are located within 200 m of the affected road network. Therefore, all ecological receptors have been scoped out of this assessment.



Figure 4-3. Sensitive Receptor Locations

5.0 ASSESSMENT OF AIR QUALITY IMPACTS - CONSTRUCTION PHASE

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/PM₁₀ concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

5.2 PARTICULATE MATTER (PM₁₀)

The UK Air Quality Standards seek to control the health implications of respirable PM₁₀. 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 PM₁₀ 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 10µm 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 200mg/m²/day. Therefore, a deposition rate of 200mg/m²/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 February 2014.

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 A.

5.5 ASSESSMENT RESULTS

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

Construction Process	Site Criteria	Dust Emission Magnitude
Demolition	Total building volume <20,000 m ³	Small
Earthworks	No earthworks required	N/A
Construction	Total Building Volume <25,000 m ³	Small
Trackout	Assumed <10 HDV outward movements in any one day	Small

Table 5-1. Dust Emission Magnitude

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 to the distance from the application site which is greater than 500m. This is in accordance with Table 4 of the IAQM Guidance.

	Area Sensitivity						
Source	Dust Soiling	Site Sensitivity Criteria	Health Effects of PM ₁₀	Site Sensitivity Criteria	Ecological	Site Sensitivity Criteria	
Demolition	High	>100 Highly Sensitive Receptors within 50m	Low	Annual Mean of <24 ug/m ³ for PM ₁₀ >100 Highly Sensitive Receptors within 50m	N/A	>50 m from site boundary	
Earthworks	N/A	No eearthworks required	N/A	No earthworks required	N/A	No earthworks required	
Construction	High	>100 Highly Sensitive Receptors within 50m	Low	Annual Mean of <24 ug/m ³ for PM ₁₀ >100 Highly Sensitive Receptors within 50m	N/A	>50 m from site boundary	
Trackout	High	>100 Highly Sensitive	Low	Annual Mean of <24 ug/m ³ for	N/A	>50 m from roads within 500	

Table 5-2. Sensitivity of the Area

Receptors within 50m of roads within 500m of site	PM ₁₀ >100 Highly Sensitive Receptors within 50m of roads within 500m of	m from site boundary
	site	

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

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

Appropriate mitigation measures are detailed and presented in Section 7. 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 - OPERATIONAL PHASE

In the context of the proposed development, road traffic is identified as the dominant emission source that is likely to cause potential risk of exposure of air pollutants at receptors. There are not expected to be any potential impacts on air quality as a result of the proposed lab-enabled office space within the proposed development.

The operational phase assessment therefore consists of the quantified predictions of the change in NO_2 , PM_{10} and $PM_{2.5}$ for the operational phase of the development due to changes in traffic movement. 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, the operational phase assessment has been undertaken with a worst-case operational opening year of 2022. The assessment scenarios are therefore:

- 2019 Baseline = Existing Baseline Conditions (2019);
- 2022 'Do Minimum' = Baseline Conditions + Committed Development Flows (through local growth factor); and,
- 2022 'Do Something' = Baseline Conditions + Committed Development (through local growth factor)
 + Proposed Development.

6.1 EXISTING AND PREDICTED TRAFFIC FLOWS

Baseline 2019 traffic data, projected 2022 'Do Minimum' and 'Do Something' traffic data, and average vehicle speeds have been obtained for the operational phase assessment in the form of Annual Average Daily Traffic figures (AADT). Worst-case development traffic flows have been provided by Velocity Transport Planning.

Baseline 2019 traffic data was downloaded from the Department for Transport (DfT) website. The proposed development opening year is assumed to be a worst-case year of 2022. To determine the traffic flows for the 2022 'Do Minimum' traffic flows, a TEMPro factor of 1.0369 has been applied to the 2019 Baseline traffic data.

Predicted development flows have been combined with 2022 'Do Minimum' traffic flows to determine the 'Do Something' 2022 scenario traffic flows.

To calculate the 2022 'Do Something' operational year traffic flows, the proposed development traffic flows have been distributed across the model area and have been added onto the 2022 'Do Minimum' scenario flows.

Emission factors for the 2019 baseline and 2022 projected 'Do Minimum' and 'Do Something' scenarios have been calculated using the Emission Factor Toolkit (EFT) Version 10.1 (August 2020).

It is assumed the average vehicle speeds on the local road network in an opening year of 2022 will be broadly the same as the ones in 2019. A 50 m 20 km/hr slow down phase is included on each link at every junction and roundabout within the assessment. All of the roads within the dispersion model are illustrated in **Figure A-1**. Detailed traffic figures are provided in the **Table 6-1**.

Link	Speed	2019 Baseline		2022 Do Minimum		2022 Do Something	
	(km/h)	AADT	HGV %	AADT	%HGV	AADT	%HGV
York Way (South of Caledonia Street)	32	11,280	4.2	11696	4.2	11,700	4.2
York Way (North of Caledonia Street)	32	11,280	4.2	11696	4.2	11,696	4.2
Wharfdale Road	32	7,309	4.0	7579	4.0	7,579	4.0
Caledonian Road (South of Caledonia Street)	32	8,820	3.4	9145	3.4	9,149	3.5
Caledonian Road (North of Caledonia	32	8,820	3.4	9145	3.4	9,145	3.4
Pentonville Road	32	23,793	3.2	24671	3.2	24,675	3.2
Euston Road	48	51,573	3.5	53476	3.5	53,480	3.5
A501 Grays Inn Road	32	12,959	2.5	13437	2.5	13,437	2.5
Judd Street	32	11,761	5.6	12195	5.6	12,210	5.7
Cartwright Gardens	32	2,047	2.2	2123	2.2	2,126	2.4
Tavistock Place	32	8,052	3.9	8349	3.9	8,357	4.0
Sidmouth Street	32	10,354	7.1	10736	7.1	10,744	7.1
Gray's Inn Road	32	12,959	2.5	13437	2.5	13,441	2.5
Upper Woburn Place / Tavistock Square	32	14,516	6.3	15052	6.3	15,054	6.3

Table 6-1. Traffic Data

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) (16).

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 (16) 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 (NOx), NO₂, PM₁₀ and PM_{2.5}.

Receptor Location	2019					
	NO _x	NO ₂	PM 10	PM _{2.5}		
	Local Authority Mo	nitoring				
CD9	70.65	39.56	20.17	12.90		
CA4A	69.50	39.26	20.34	12.92		
CA27	70.65	39.56	20.17	12.90		
E	Existing Sensitive R	eceptors				
R1	70.65	39.56	20.17	12.90		
R2	70.65	39.56	20.17	12.90		
R3	70.65	39.56	20.17	12.90		
R4	69.50	39.26	20.34	12.92		
R5	69.50	39.26	20.34	12.92		
R6	69.50	39.26	20.34	12.92		
R7	69.50	39.26	20.34	12.92		
R8	69.50	39.26	20.34	12.92		
R9	69.50	39.26	20.34	12.92		
R10	69.50	39.26	20.34	12.92		
R11	56.37	33.72	20.14	12.85		
R12	69.50	39.26	20.34	12.92		
R13	69.50	39.26	20.34	12.92		
R14	56.37	33.72	20.14	12.85		
R15	56.37	33.72	20.14	12.85		
R16	56.37	33.72	20.14	12.85		
R17	69.50	39.26	20.34	12.92		
R18	69.50	39.26	20.34	12.92		
R19	56.37	33.72	20.14	12.85		
P	roposed Sensitive R	eceptors				
PR1 – PR4	69.50	39.26	20.34	12.92		

Table 6.2	Dublished				(ua/m^3)
Table 0-2.	Fublished	background A	an Quality	Levels	(µg/m°)

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**.

	2019						
Receptor Location	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							
CD9	70.65	37.58	7.01	33.68	0.01	1.12	20.59
CA4A	69.50	31.91	8.78	39.37	0.01	1.00	18.93
CA27	70.65	37.58	7.01	33.68	0.01	1.12	20.59
Existing Sensitive Receptors							
R1	70.65	37.58	7.01	33.68	0.01	1.12	20.59

Table 6-3. Pollutant Source Apportionment of NO_X (µg/m³)

R2	70.65	37.58	7.01	33.68	0.01	1.12	20.59
R3	70.65	37.58	7.01	33.68	0.01	1.12	20.59
R4	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R5	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R6	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R7	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R8	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R9	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R10	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R11	56.37	36.38	7.39	33.00	0.02	2.55	20.67
R12	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R13	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R14	56.37	36.38	7.39	33.00	0.02	2.55	20.67
R15	56.37	36.38	7.39	33.00	0.02	2.55	20.67
R16	56.37	36.38	7.39	33.00	0.02	2.55	20.67
R17	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R18	69.50	31.91	8.78	39.37	0.01	1.00	18.93
R19	56.37	36.38	7.39	33.00	0.02	2.55	20.67
Proposed Sensitive Receptors							
PR1 – PR4	69.50	31.91	8.78	39.37	0.01	1.00	18.93

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 LBoC.

Table 6-4 shows the background concentrations utilised within the assessment.

Receptor Location	2019		Source
	NOx	NO ₂	
	Local Au	thority Monitorin	g
CD9	70.65	39.56	
CA4A	69.50	39.26	Defra Background Maps
CA27	70.65	39.56	
	Existing S	ensitive Recepto	rs
R1*	70.65	39.56	
R2*	70.65	39.56	
R3*	70.65	39.56	
R4*	69.50	39.26	
R5*	69.50	39.26	
R6*	69.50	39.26	Defra Background Maps
R7*	69.50	39.26	
R8*	69.50	39.26	
R9*	69.50	39.26	
R10*	69.50	39.26	
R11*	56.37	33.72	

Table 6-4. Utilised Background Concentrations (µg/m³)

R12**	69.50	39.26			
R13*	69.50	39.26			
R14*	56.37	33.72			
R15*	56.37	33.72			
R16*	56.37	33.72			
R17*	69.50	39.26			
R18*	69.50	39.26			
R19*	56.37	33.72			
Proposed Sensitive Receptors					
PR1 – PR4	69.50	39.26			

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 TG16 guidance note and uses the most recently available diffusion tube monitoring data to best represent this.

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 NO₂ exposure at the relevant receptor locations based on the updated approach to deriving NO₂ from NO_x for road traffic sources published in Local Air Quality Management TG16. The calculation was derived using the NO_x to NO₂ 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.

Monitoring Site			
	Monitored NO ₂	Modelled NO ₂	Difference (%)
CD9	70.00	71.69	2.41
CA4A	69.06	66.41	-3.84
CA27	63.81	64.53	1.13

Table 6-5. Comparison of Roadside Modelling & Monitoring Results for NO2

The final model produced data at the monitoring locations to within 10% / 25% of the monitoring results at all of the verification points, as recommended by TG16 guidance.

The final verification model correlation coefficient (representing the model uncertainty) is 1.00. This was achieved by applying a model correction factor of 1.64 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.

6.4 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 and the met. Measurement site.
Latitude	Allows the location of the model area to be set	United Kingdom = 51.53
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 Small Towns = 1 0m was used for 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.	London - Inner 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
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 10.1 (2020) dataset was used.
Year	Predicted EFT emissions rates depend on the year of emission.	 2019 data for verification and baseline Operational Phase Assessment. 2022 data for the Operational Phase Traffic Assessment.

Table 6-6. Summary of ADMS Roads Model Inputs

6.5 ADMS MODELLING RESULTS

6.5.1 Traffic Assessment

The ADMS Model has predicted concentrations of NO₂, PM₁₀ 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 2022, assessment of the effects of emissions from the proposed traffic associated with the scheme, has been undertaken using the Emissions Factor Toolkit (EFT) 2022 emissions rates which take into account of the rate of reduction in emission from road vehicles into the future with the following factors:

- 2019 Baseline = Existing Baseline conditions;
- 2022 'Do Minimum' = 2022 Baseline + Committed Development Flows (through local growth factor); and,

 2022 'Do Something' = 2022 Baseline + Committed Development Flows (through local growth factor) + Development Traffic Flows.

6.5.3 Operational Traffic Assessment

Nitrogen Dioxide

Table 6-7 presents a summary of the predicted change in NO₂ 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.

NO₂ (µg/m³) Receptor 2019 2022 2022 Development **Do Minimum Do Something** Contribution Baseline R1 70.97 0.01 161 Euston Road 62.97 62.98 R2 117 Euston Road 48.36 45.89 45.89 < 0.01 9 Mabledon Place 42.41 41.59 < 0.01 R3 41.59 0.01 R4 45.85 43.93 2 Tavistock Place 43.94 < 0.01 R5 101 Marchmont Street 40.76 40.33 40.33 74 Marchmont Street 44.71 0.01 R6 46.91 44.72 0.02 R7 103 Judd Street 47.53 45.11 45.13 305 Judd Street 46.39 0.02 R8 49.34 46.41 R9 Cambria House 37 Hunter Street 47.48 45.09 45.11 0.02 41.76 <0.01 R10 Selsey Tavistock Place 42.88 41.76 R11 Premier Inn Kings Cross 37.32 36.29 < 0.01 36.29 44.49 < 0.01 R12 341 Gray's Inn Road 46.56 44.49 R13 42.71 <0.01 2 Saint Chad's Street 44.06 42.71 R14 272 Pentonviille Road 42.73 40.22 < 0.01 40.22 R15 37.75 36.61 < 0.01 26b Caledonian Road 36.61 R16 37.17 36.19 < 0.01 44 Caledonian Road 36.19 R17 <0.01 Travelodge Kings Cross 42.99 41.94 41.94 R18 Linfield Sidmouth Street 42.76 41.67 < 0.01 41.67 R19 200 Pentonville Road 38.20 36.97 36.97 < 0.01 PR1 Proposed Receptor 40.86 ---PR2 **Proposed Receptor** 42.42 PR3 Proposed Receptor 45.12 --PR4 **Proposed Receptor** 40.63 _ _ _ **Annual Mean AQO** 40 µg/m³

Table 6-7. Predicted Annual Average Concentrations of NO2 at Receptor Locations

As indicated in **Table 6-7**, the maximum predicted increase in annual average exposure to NO₂ at any existing receptor, due to changes in traffic movements associated with the proposed development is likely to be 0.02 μ g/m³ at 103 Judd Street (R7), 305 Judd Street (R8), and Cambria House 37 Hunter Street (R9).

The maximum predicted annual average exposure to NO_2 at any proposed receptor at the ground floor is 45.12 μ g/m³. All modelled proposed residential receptors are predicted to be below the annual average AQO for NO_2 .

The predicted long-term NO₂ concentrations at all proposed receptors are well below 60 μ g/m³ in all scenarios. Therefore, it is unlikely there will be any exceedances for the short-term NO₂ AQO at all modelled receptors as outlined in LAQM TG16 technical guidance.

Figure 6-1, **Figure 6-2** and **Figure 6-3** below, illustrate the Total Long Term Annual Average Nitrogen Dioxide (NO₂) Contribution and Concentration at the Proposed Development (μ g/m³).



Figure 6-1. Annual Average Long-Term Nitrogen Dioxide (NO2) Contribution from Proposed Development (µg/m3)







Figure 6-3. Total Long Term Annual Average Nitrogen Dioxide (NO₂) Concentration Across the Study Area (µg/m³)

The impact description of changes in traffic flow associated with the proposed development with respect to annual mean NO₂ exposure has been assessed with reference to the criteria in Section 3. The outcomes of the assessment are summarised in **Table 6-8**.

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	0.01	0.03	0%	≥110 of AQO	Negligible
R2	<0.01	<0.01	0%	≥110 of AQO	Negligible
R3	<0.01	<0.01	0%	103-109 of AQO	Negligible
R4	0.01	0.03	0%	≥110 of AQO	Negligible
R5	<0.01	<0.01	0%	95-102% of AQO	Negligible
R6	0.01	0.03	0%	≥110 of AQO	Negligible
R7	0.02	0.05	0%	≥110 of AQO	Negligible
R8	0.02	0.05	0%	≥110 of AQO	Negligible
R9	0.02	0.05	0%	≥110 of AQO	Negligible
R10	<0.01	<0.01	0%	103-109 of AQO	Negligible
R11	<0.01	<0.01	0%	76-94% of AQO	Negligible
R12	<0.01	<0.01	0%	≥110 of AQO	Negligible
R13	<0.01	<0.01	0%	103-109 of AQO	Negligible
R14	<0.01	<0.01	0%	95-102% of AQO	Negligible
R15	<0.01	<0.01	0%	76-94% of AQO	Negligible
R16	<0.01	<0.01	0%	76-94% of AQO	Negligible
R17	<0.01	<0.01	0%	103-109 of AQO	Negligible
R18	<0.01	<0.01	0%	103-109 of AQO	Negligible
R19	<0.01	<0.01	0%	76-94% of AQO	Negligible
	+0% means a change	of <0.5% as per explana	atory note 2 of table 6.3 of	f the EPUK IAQM Guidand	ce.

Table 6-8. Impact Description of Effects at Key Receptors (NO₂)

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. 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 (PM10)

Table 6-9 presents a summary of the predicted change in annual mean PM₁₀ 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.

		PM ₁₀ (μg/m³)				
	Receptor	2019 Baseline	2022 Do Minimum	2022 Do Something	Development Contribution	
R1	161 Euston Road	26.76	26.53	26.53	<0.01	
R2	117 Euston Road	21.80	21.74	21.74	<0.01	
R3	9 Mabledon Place	20.71	20.69	20.69	<0.01	

Table 6-9. Predicted Annual Average Concentrations of PM₁₀ at Receptor Locations

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R4	2 Tavistock Place	21.52	21.48	21.48	<0.01
R5	101 Marchmont Street	20.63	20.62	20.62	<0.01
R6	74 Marchmont Street	21.72	21.67	21.67	<0.01
R7	103 Judd Street	22.07	22.02	22.02	<0.01
R8	305 Judd Street	22.17	22.10	22.11	0.01
R9	Cambria House 37 Hunter Street	21.83	21.77	21.77	<0.01
R10	Selsey Tavistock Place	21.04	21.02	21.02	<0.01
R11	Premier Inn Kings Cross	20.83	20.81	20.81	<0.01
R12	341 Gray's Inn Road	21.75	21.70	21.70	<0.01
R13	2 Saint Chad's Street	21.26	21.23	21.23	<0.01
R14	272 Pentonviille Road	21.84	21.79	21.79	<0.01
R15	26b Caledonian Road	20.91	20.89	20.89	<0.01
R16	44 Caledonian Road	20.80	20.78	20.78	<0.01
R17	Travelodge Kings Cross	21.06	21.03	21.03	<0.01
R18	Linfield Sidmouth Street	20.99	20.97	20.97	<0.01
R19	200 Pentonville Road	21.03	21.00	21.01	0.01
PR1	Proposed Receptor	-	-	20.76	-
PR2	Proposed Receptor	-	-	21.21	-
PR3	Proposed Receptor	-	-	22.02	-
PR4	Proposed Receptor	-	-	20.71	-
Annual Mean AQO			40 µ	g/m³	

All modelled existing receptors are predicted to be below the AQO for PM₁₀ 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 0.01 µg/m³ at 305 Judd Street (R8) and 200 Pentonville Road (R19).

The maximum predicted annual average exposure to PM_{10} at any proposed receptor at the ground floor is 22.02 μ g/m³. All modelled proposed residential receptors are predicted to be below the annual average AQO for PM_{10} .

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. The outcomes of the assessment are summarised in **Table 6-10**.

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	<0.01	<0.01	0%	≤75% of AQO	Negligible
R2	<0.01	<0.01	0%	≤75% of AQO	Negligible
R3	<0.01	<0.01	0%	≤75% of AQO	Negligible
R4	<0.01	0.01	0%	≤75% of AQO	Negligible
R5	<0.01	<0.01	0%	≤75% of AQO	Negligible
R6	<0.01	0.01	0%	≤75% of AQO	Negligible
R7	<0.01	0.01	0%	≤75% of AQO	Negligible
R8	0.01	0.01	0%	≤75% of AQO	Negligible

Table 6-10) Impact Descr	intion of Effects	at Kov Roce	ontors (PM ₄₀)
	J. Impact Desci	iption of Enects	a ney neu	=plois (Fivi10)

R9	<0.01	0.01	0%	≤75% of AQO	Negligible		
R10	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R11	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R12	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R13	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R14	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R15	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R16 <0.01 0% ≤75% of AQO Negligible							
R17 <0.01 0% ≤75% of AQO Negligible							
R18	<0.01	<0.01	0%	≤75% of AQO	Negligible		
R19	0.01	<0.01	0%	≤75% of AQO	Negligible		
	+0% means a change	of <0.5% as per explana	atory note 2 of table 6.3 of	the EPUK IAQM Guidan	ce.		

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. 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.

Receptor		PM _{2.5} (μg/m ³)				
		2019 Baseline	2022 Do Minimum	2022 Do Something	Development Contribution	
R1	161 Euston Road	16.96	16.61	16.61	<0.01	
R2	117 Euston Road	13.90	13.81	13.81	<0.01	
R3	9 Mabledon Place	13.22	13.20	13.20	<0.01	
R4	2 Tavistock Place	13.65	13.58	13.58	<0.01	
R5	101 Marchmont Street	13.09	13.08	13.08	<0.01	
R6	74 Marchmont Street	13.77	13.69	13.70	0.01	
R7	103 Judd Street	13.96	13.88	13.88	<0.01	
R8	305 Judd Street	14.04	13.95	13.95	<0.01	
R9	Cambria House 37 Hunter Street	13.83	13.75	13.75	<0.01	
R10	Selsey Tavistock Place	13.34	13.31	13.31	<0.01	
R11	Premier Inn Kings Cross	13.27	13.24	13.24	<0.01	
R12	341 Gray's Inn Road	13.78	13.71	13.71	<0.01	
R13	2 Saint Chad's Street	13.48	13.43	13.43	<0.01	
R14	272 Pentonviille Road	13.89	13.80	13.80	<0.01	
R15	26b Caledonian Road	13.32	13.28	13.28	<0.01	
R16	44 Caledonian Road	13.25	13.22	13.22	<0.01	
R17	Travelodge Kings Cross	13.36	13.32	13.32	<0.01	
R18	Linfield Sidmouth Street	13.31	13.28	13.28	<0.01	
R19	200 Pentonville Road	13.39	13.35	13.35	<0.01	
PR1	Proposed Receptor	-	-	13.16	-	
PR2	Proposed Receptor	-	-	13.42	-	

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

PR3	Proposed Receptor	-	-	13.88	-
PR4	Proposed Receptor	-	-	13.13	-
Annual Mean AQO		25 μg/m³			

All modelled existing receptors are predicted to be below the AQO for PM_{2.5} in both the 'Do Minimum' and 'Do Something' scenarios.

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 μ g/m³ at 74 Marchmont Street (R6).

The maximum predicted annual average exposure to NO₂ at any proposed receptor at the ground floor is 13.88 μ g/m³. All modelled proposed residential receptors are predicted to be below the annual average AQO for PM_{2.5}.

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. The outcomes of the assessment are summarised in **Table 6-12**.

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	<0.01	0%	≤75% of AQO	Negligible
R2	<0.01	<0.01	0%	≤75% of AQO	Negligible
R3	<0.01	<0.01	0%	≤75% of AQO	Negligible
R4	<0.01	0.01	0%	≤75% of AQO	Negligible
R5	<0.01	<0.01	0%	≤75% of AQO	Negligible
R6	0.01	0.01	0%	≤75% of AQO	Negligible
R7	<0.01	0.01	0%	≤75% of AQO	Negligible
R8	<0.01	0.01	0%	≤75% of AQO	Negligible
R9	<0.01	0.01	0%	≤75% of AQO	Negligible
R10	<0.01	<0.01	0%	≤75% of AQO	Negligible
R11	<0.01	<0.01	0%	≤75% of AQO	Negligible
R12	<0.01	<0.01	0%	≤75% of AQO	Negligible
R13	<0.01	<0.01	0%	≤75% of AQO	Negligible
R14	<0.01	<0.01	0%	≤75% of AQO	Negligible
R15	<0.01	<0.01	0%	≤75% of AQO	Negligible
R16	<0.01	<0.01	0%	≤75% of AQO	Negligible
R17	<0.01	<0.01	0%	≤75% of AQO	Negligible
R18	<0.01	<0.01	0%	≤75% of AQO	Negligible
R19	<0.01	<0.01	0%	≤75% of AQO	Negligible
	+0% means a change	of <0.5% as per explana	tory note 2 of table 6.3 of	the EPUK IAOM Guidan	פי

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

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. 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 that, "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) Sustainable Design and Construction Supplementary Planning Guidance (SPG), published in April 2014, provides a formal definition for the term 'air quality neutral' and allows 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 SPG calculation method that separately quantifies building emissions (from heating and power plant) and transport emissions.

The GLA published a report titled 'Air Quality Neutral Planning support update (GLA 80371)' in April 2014. This updated report provided a guidance note on the application of the air quality neutral policy.

7.1 BENCHMARK EMISSIONS

Buildings Emissions Benchmark (BEB)

The GLA 80371 report has defined two Building Emission Benchmarks (BEB), one for NO_X and one for PM₁₀, for a series of land-use classes. The benchmarks are expressed in terms of g/m2/annum. The gross floor area (GFA) is used to define the area.

The derived BEBs for NO_X and PM_{10} Emissions are shown in **Table 7-1**.

Land Use	NO _x (g/m²)	PM ₁₀ (g/m²)
E(a) – Formerly Class A1	22.6	1.29
E(b) – Formerly Class A3- A5	75.2	4.32
E(c) – Formerly Class A2 and Class B1	30.8	1.77
Class B2- B7	36.6	2.95
Class B8	23.6	1.90
Class C1	70.9	4.07

Table 7-1. Building Emissions Benchmarks
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Class C2	68.5	5.97
Class C3	26.2	2.28
E(e) – Formerly D1 (a)	43.0	2.47
E(f) – Formerly D1 (b)	75.0	4.30
F1 - Formerly Class D1(c -h)	31.0	1.78
Sui Generis – Formerly Class D2(a-d)	90.3	5.18

Note 1: These benchmarks have been calibrated for London.

7.2 TRANSPORT EMISSIONS BENCHMARKS

The derived Transport Emission Benchmarks (TEB) for NO_x and PM₁₀ Emissions are shown in Table 7-2.

Land use	CAZ	Inner	Outer				
	NO _x (g/m	²/annum)					
Retail (E(a))	169	219	249				
Office & Commercial (E(c))	1.27	11.4	68.5				
	NO _x (g/m ² /annum)						
Residential (C3)	234	558	1553				
	PM ₁₀ (g/m	n²/annum)					
Retail (E(a))	29.3	39.3	42.9				
Office & Commercial (E(c))	0.22	2.05	11.8				
PM₁₀ (g/dwelling/annum)							
Residential (C3, C4)	40.7	100	267				

7.3 EMISSIONS BENCHMARKS

Building Emissions

It is assumed that any plant is installed in line with the Mayor of London's Supplementary Planning Guidance, 'Sustainable Design and Construction' as detailed below in **Table 7-3**.

Table 7-3. Emission Standards for Solid Biomass Boilers and CHP Plant in the Thermal Input Range 50kWthto less than 20MWth for development in Band A

Combustion Appliance	Combustion Appliance	Pollutant/ Parameter Emission Standard at Reference O2 (mg Nm-3)	Equivalent Concentration at 0% O2 (mg Nm-3)	Likely Technique Required to Meet Emission Standard
Spark ignition engine (natural gas/biogas)	NO _x	250	329	Advanced lean burn operation (lean burn engines) NSCR (rich burn engines)
Compression ignition engine (diesel/biodiesel)	NO _x	400	526	SCR
Gas turbine	NO _x	50	177	None above standard technology for modern turbines
Solid biomass boiler (including those involved in CHP applications)	NO _x	275	386	Modern boiler with staged combustion and automatic control
	РМ	25	35	Modern boiler with staged combustion and automatic control

				including cyclone/ multicyclone
All (stack heat release less than 1MW)	Stack discharge velocity	10 ms-1	N/A	Appropriate design of stack discharge diameter to achieve required velocity
All (stack heat release greater than or equal to 1MW)	Stack discharge velocity	15 ms-1	N/A	Appropriate design of stack discharge diameter to achieve required velocity

Assuming compliance with the above guidance, there will be no exceedance of the building emissions benchmarks and the development will be 'neutral'.

Transport Emissions

The transport assessment provides a summary of daily 2-way trips generation by the proposed development:

Vehicle Trips

Velocity Transport Planning have provided worst-case development trips associated with the development purpose of the Air Quality Neutral assessment of transport emissions.

Table 7-4. Transport Emissions Land Use Class and Development Trips

	Landling		Traffic				Floor Area
Land Use / Area	Land Use	Area	Light Vehicles	HGVs	Total	Annual Trips	(sqm) (GIA)
Office & Commercial	E(c)	Inner	0	15	15	5,475	8,781

The average journey lengths for residential, office and retail developments are presented in **Table 7-5**. The average emissions rates for cars, in g/veh-km, for CAZ, Inner and Outer London per vehicle-km are presented in **Table 7-5**.

Table 7-5. Average Distance Travelled by Car per Trip

Land Lice Class	Distance (km)					
Land Use Class	CAZ	Inner	Outer			
Residential (C3) ⁽¹⁾	4.3	3.7	11.4			
Office & Commercial (E(c))*	3.0	7.7	10.8			
Retail (E(a))	9.3	5.9	5.4			
(1) Based on the LTDS destination.						

Note these distances are based on the straight line between the origin and destination of a trip not the actual trip lengths.

Table 7-6. Emission Factors

Land Lice Class	g/vehicle-km			
	CAZ	Inner	Outer	
NO _x	0.4224	0.370	0.353	
PM ₁₀	0.0733	0.0665	0.0606	

Transport Emissions

The average distance travelled for Office & Commercial use (E(c)) is 7.7 km per trip. The NO_x emission factor is 0.370 g/veh-km (for Inner London) and 0.0353 g/veh-km for PM₁₀ and thus the development transport

emissions are as follows.

Vehicle Trips

The total benchmarked building NO_x and PM₁₀ emissions are calculated from the land use categories and the TEBs and are shown in **Table 7-7**. Where no benchmark has been defined, a worst-case benchmark has been used.

Table 7-7. Calculation of Benchmarked NOx emissions Using Transport Emissions Benchmarks for Each Land-use Category

Land Use Class	GIA m ²	NO _x Transport Emissions Benchmarks (gNO _{x/} dwelling/annum)	PM₁₀ Transport Emissions Benchmarks (gNO₅⁄dwelling/annum)	NO _x Benchmarked Emissions (kgNO _x /annum)	PM ₁₀ Benchmarked Emissions (kgNO _x /annum)
Office & Commercial (E(c))	8,781	11.4	2.05	100.10	18.00
	Total	Benchmarked Transport Emi	100.10	18.00	

Table 7-8. Calculation of Air Quality Neutral Transport Emissions

Land Use / Area	Land Use Class	Annual Trips	NO _x Emission Factor (g/vehicle-km)	PM₁₀ Emission Factor (g/vehicle-km)	Average Distance Travelled (km)	NO _x Transport Emissions (kg/annum)	PM₁₀ Transport Emissions (kg/annum)
Office & Commercial	E(c)	5,475	0.370	0.0665	7.7	15.60	2.80
Total Calculated Transport Emissions (kg/annum)						15.60	2.80

The total transport emission of 15.60 kg/annum for NOx and 2.80 kg/annum for PM_{10} may be compared with the total benchmarked transport NO_x emission of 100.10 kg/annum and the total benchmarked transport PM_{10} emission of 18.00 kg/annum respectively. The results indicate that the transport emission of NO_x and PM_{10} are below the benchmark criteria in **Table 7-8** and can therefore be considered air quality neutral.

7.4 SUMMARY OF AIR QUALITY NEUTRAL ASSESSMENT

The proposed development is to be installed with plant, in accordance with the Mayor of London's Supplementary Planning Guidance and can therefore be considered air quality neutral. Both transport NO_x emissions and transport PM₁₀ emissions are below the transport emission benchmark and the development can be considered Air Quality Neutral.

8.0 MITIGATION

Communications

8.1 CONSTRUCTION PHASE

The dust risk categories have been determined in Section 5 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 A, appropriate site-specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the 'IAQM 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

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. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real time PM₁₀ 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 log book. 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 on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.

Ensure all vehicles switch off engines when stationary - no idling vehicles.

Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

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.

Demolition

Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Bag and remove any biological debris or damp down such material before demolition.

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 log book.

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 window sills 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).

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.

9.0 CONCLUSIONS

Tetra Tech have undertaken an Air Quality Assessment in relation to conversion to combined laboratoryenabled offices at the basement, ground, first, second, third and fourth floors and creation of additional set-back fifth & sixth floors at 105 Judd Street, Camden, WC1H 9NE.

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.

Operational Assessment

The 2022 assessment of the effect of emissions from traffic associated with the scheme, has determined that the maximum predicted increase in the annual average exposure to NO₂ at any existing receptor is likely to be $0.02 \ \mu g/m^3$ at 103 Judd Street (R7), 305 Judd Street (R8), and Cambria House 37 Hunter Street (R9).

The predicted long-term NO₂ concentrations at all proposed receptors are well below 60 μ g/m³ in all scenarios. Therefore, it is unlikely there will be any exceedances for the short-term NO₂ AQO at all proposed receptors as outlined in LAQM TG16 technical guidance, and therefore no additional mitigation is required.

For PM₁₀, the maximum predicted increase in the annual average exposure is likely to be 0.01 μ g/m³ at 305 Judd Street (R8) and 200 Pentonville Road (R19). For PM_{2.5}, the maximum predicted increase in the annual average exposure is likely to be 0.01 μ g/m³ at 74 Marchmont Street (R6).

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO₂, PM₁₀ 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'.

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



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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 guidance¹.

Step 1 – Screen the Requirement for a more Detailed Assessment

An assessment is required if there are sensitive receptors within 350m of the site boundary, within 50m of the route(s) used by construction vehicles on the surrounding road network, or within 500m from the site entrance. A detailed assessment is also required if there is an ecological receptor within 50m of the site boundary.

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 >50 000m³, potentially dusty construction (e.g. concrete), on-site crushing and screening, demolition activities >20m above ground level;
- *Medium*: Total building volume 20 000m³ 50 000m³, potentially dusty construction material, demolition activities 10-20m above ground level; and,
- Small: Total building volume <20 000m³, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m 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 >10 000m², 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 >8m in height, total material moved >100 000 tonnes;
- Medium: Total site area 2 500m² 10 000m², moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4m-8m in height, total material moved 20 000 tonnes 100 000 tonnes; and
- Small: Total site area <2 500 m², soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <10 000 tonnes, earthworks during wetter months.

Construction

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

- Large: Total building volume >100 000m³, on site concrete batching; sandblasting
- *Medium:* Total building volume 25 000m³ 100 000m³, potentially dusty construction material (e.g. concrete), on site concrete batching; and,
- Small: Total building volume <25 000m³, 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 HGV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- Medium: 10-50 HGV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m; and,
- Small: <10 HGV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

Step 2B - Defining the Sensitivity of the Area

Sensitivities of People to Dust Soiling Effects

- High:
 - * Users can reasonably expect an enjoyment of a high level of amenity;
 - * The appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably expect to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land; and,
 - * Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks

¹ Institute of Air Quality Management 2014. Guidance on the Assessment of dust from demolition and construction.

and car showrooms.

- Medium:
 - * Users can reasonably 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; and,
 - * 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; and,
 - * 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:

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

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

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites (as defined in step 2A), 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Sensitivities of People to the Health Effects of PM₁₀

High:

- Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (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 PM₁₀ (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); and,
 - Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation.

Low:

- * Locations where human exposure is transient; and,
- * 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:

Receptor	Annual Mean	Number of	Distance from the Source (m)					
Sensitivity	Concentration	Receptors	<20	<50	<100	<200	<350	
		>100	High	High	High	Medium	Low	
	>32 µg/m³	10-100	High	High	Medium	Low	Low	
		1-10	High	Medium	Low	Low	Low	
		>100	High	High	Medium	Low	Low	
	28 - 32 µg/m³	10-100	High	Medium	Low	Low	Low	
High		1-10	High	Medium	Low	Low	Low	
	24 – 28 µg/m³	>100	High	Medium	Low	Low	Low	
		10-100	High	Medium	Low	Low	Low	
		1-10	Medium	Low	Low	Low	Low	
		>100	Medium	Low	Low	Low	Low	
	<24 µg/m ³	10-100	Low	Low	Low	Low	Low	
		1-10	Low	Low	Low	Low	Low	
Modium	-	>10	High	Medium	Low	Low	Low	
wedium	-	1-10	Medium	Low	Low	Low	Low	
Low	-	>1	Low	Low	Low	Low	Low	

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

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites (as defined in step 2A), 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Sensitivities of Receptors to Ecological Effects

High:

- * Locations with an international or national designation and the designated features may be affected by dust soiling;
- * Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain; and,
- * 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;
 - * Locations with a national designation where the features may be affected by dust deposition; and,
 - * 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; and,
 - * 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	b Ecological	Impacts

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

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites (as defined in step 2A), 200 m from medium sites and 50 m from small sites, as measured from the site exit.

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	Low 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.

APPENDIX C - REPORT TERMS & CONDITIONS

This Report has been prepared using reasonable skill and care for the sole benefit of 105 Judd Street Ltd ('the Client') for the proposed uses stated in the report by Tetra Tech Limited ('Tetra Tech'). Tetra Tech exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder's permission.

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The 'shelf life' of the Report will be determined by a number of factors including; its original purpose, the Client's instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.