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25 OLD GLOUCESTER STREET, CAMDEN

Air Quality Assessment – Revision A

25 OLD GLOUCESTER STREET, CAMDEN
Air Quality Assessment

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Registration of Amendments

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By
Revision A 26/03/2024	Report updated based on client comments	TR	TR

1.0 INTRODUCTION

Summary

1.1 Create Consulting Engineers Limited (CCE) were instructed by Nilkanth Estates Ltd to undertake an Air Quality Assessment (AQA) in support of the planning application at 25 Old Gloucester Street, Camden, London WC1N 3AX.

1.2 The development is anticipated to open in 2025 and will involve the following:

> *"Extension of basement to accommodate additional cultural centre accommodation (use class F1 and F2) and conversion of front part of building at second and third floor levels to create 2 x studio dwellings."*

1.3 The site location is depicted in Figure 1.1 and lies within the jurisdiction of the London Borough of Camden (LBoC).

Assessment Scope

1.4 This report considers potential air quality impacts associated with construction and operation of the development. Likely changes to air quality in the area, as a result of the proposed development, have been considered in relation to the UK Air Quality Objectives (AQOs).

1.5 In terms of the construction impacts, the development proposal will have the potential to generate dust, particulate matter (PM_{10}) during the construction phases. This has been assessed to provide an adequate level of dust mitigation and practices during the construction phases.

1.6 During the operation of the development, the report assesses the impact of the surrounding area on future site users and the impact of the development on local air quality. The pollutants assessed are Nitrogen Dioxide (NO_2), $PM_{10,}$ and $PM_{2.5}$.

1.7 An Air Quality Neutral (AQN) has been undertaken to ensure that the building emissions and transport trip rates do not exceed the benchmarks set out by the Greater London Authority.

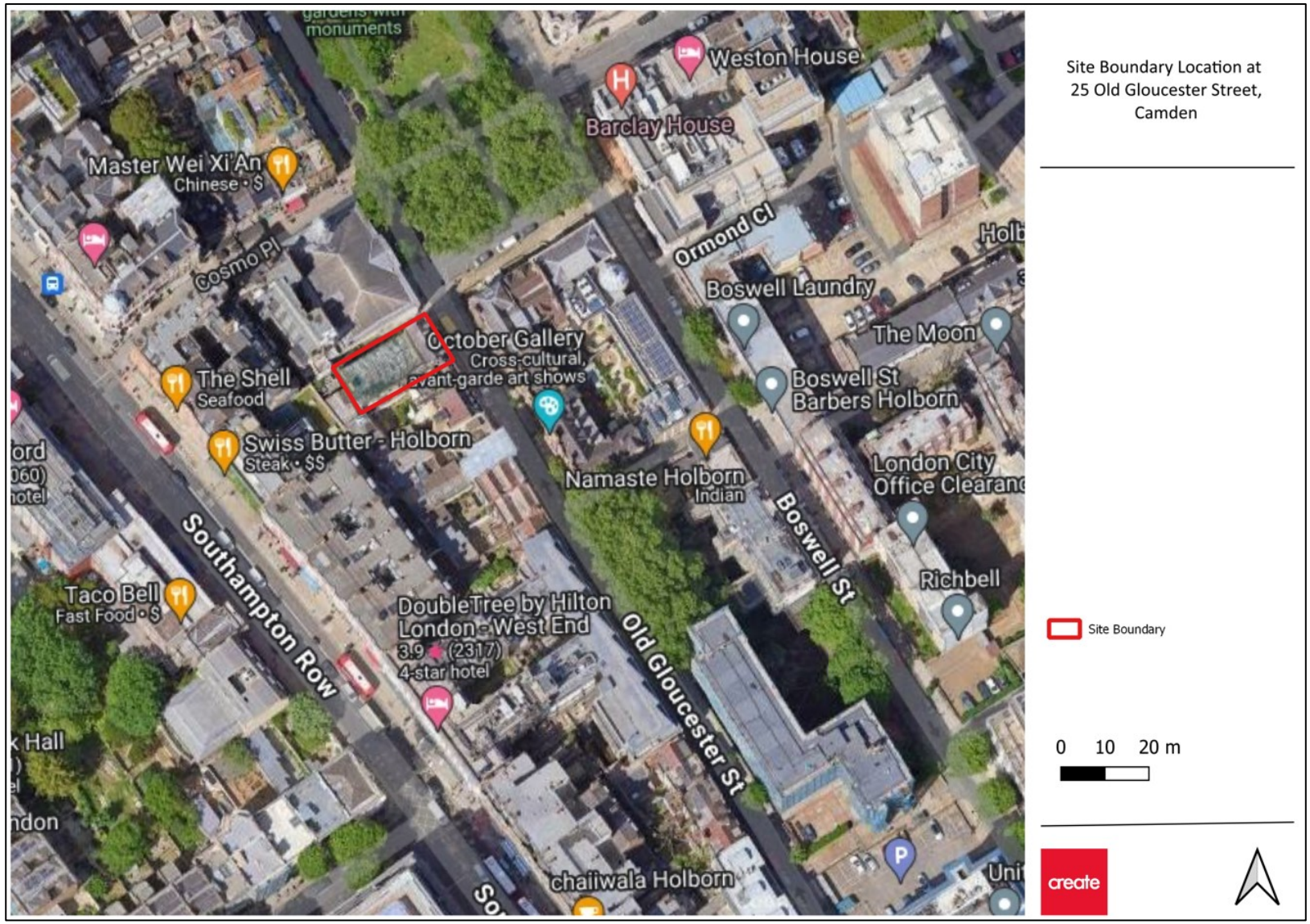

Figure 1.1: Location of the Proposed Development

2.0 LEGISLATION AND POLICY CONTEXT

The Environment Act 1995

2.1 The Environment Act 1995 placed a responsibility on the UK Government to prepare an Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland. The most recent version of the strategy sets out the current UK framework for air quality management and includes several AQOs for specific pollutants.

2.2 The 1995 Act also requires that Local Authorities "review and assess" air quality in their areas, following a prescribed timetable. The Review and Assessment process is intended to locate and spatially define areas where the UK AQOs are not being met. In such instances, the Local Authority is required to declare an AQMA, carry out a Further Assessment of air quality, and develop an Air Quality Action Plan (AQAP), which should include measures to improve air quality so that the objectives may be achieved in the future. The timetables and methodologies for carrying out Review and Assessment studies are prescribed in DEFRA's Technical Guidance – Local Air Quality Management Technical Guidance (LAQM.TG22) and Mayor of London's (MoL) London Local Air Quality Management Technical Guidance (LLAQM.TG19)

Air Quality Regulations 2016

2.3 Many of the objectives in the AQS have been made statutory in England with the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 for the purpose of Local Air Quality Management (LAQM).

2.4 These Regulations require that likely exceedances of the AQS objectives are assessed in relation to:

> *"the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present"*

2.5 The Air Quality Standards (Amendment) Regulations 2016 amends the Air Quality Standards Regulations 2010 that transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health.

Clean Air Strategy 2019

2.6 The UK government released its Clean Air Strategy as part of its 25 Year Environment Plan. The Strategy sets out the comprehensive action that is considered to be required from across all parts of government and society.

2.7 The primary focus of air quality management has primarily been related to NO_2 and its principal source in the UK, road traffic. The 2019 Strategy aims to broaden the focus to other areas, including actions on clean growth, emissions from domestic wood burning stoves, industry, and agriculture.

The Environment Act 2021

2.8 The Environment Act 1995 is being updated to include several changes that aim to improve air quality in England. These changes include a requirement for the Secretary of State to review the National Air Quality Strategy every five years, as well as a requirement for annual reports to be made to Parliament on the progress made towards achieving air quality objectives. Additionally, changes are being made to the way AQMAs are designated and managed.

2.9 The Environment Act 2021 established a new framework for environmental targets for England in regard to $PM_{2.5}$ that were set out in *The Environmental Target (Fine Particulate Matter) (England) Regulations 2023)*. These are as follows:

- *The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10 µg/m³.*
- *The population exposure reduction target is that there is at least a 35% reduction in population exposure by the end of 31st December 2040 ("the target date"), as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018.*

2.10 Table 2.1 shows the most recent Air Quality Objectives relevant to the proposed development.

Pollutant	Air Quality Objectives		
	Concentration		Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3		1-hour mean not to be exceeded more than 18 times per year
	40 µg/m^3		Annual mean
Particulate Matter (PM_{10})	50 µg/m^3		24-hour mean not to be exceeded more than 35 times per year
	40 µg/m^3		Annual mean
Particulate Matter ($PM_{2.5}$)	Interim target by 2028	12 µg/m^3	Annual mean
	Legally binding target by 2040	10 µg/m^3	

Table 2.1: Air Quality Objectives (England)

National Planning Policy Framework 2023

2.11 The National Planning Policy Framework (NPPF), paragraph 192 notes 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."*

2.12 The National Planning Practise Guidance (NPPG) (Reference ID: 32-008-20140306), states that air quality assessments and resulting mitigation measures must be location specific and proportionate to the nature/scale of development proposed and the level of concern about air quality.

Dust

2.13 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

> *"any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."*

2.14 Enforcement of the Act, in regard to nuisance, is currently under the administration of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). Enforcement can insist that there be no dust beyond the boundary of the works. The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practice measures.

Regional Planning Policy

The London Plan

2.15 Policy SI 1 of The London Plan (improving air quality) contains additional guidance for air quality in relation to planning decisions.

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; and/or
c) Create unacceptable risk of high levels of exposure to poor air quality.

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

a) Development proposals must be at least Air Quality Neutral;
b) Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures;
c) Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1; and/or
d) Development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

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

1. how proposals have considered ways to maximise benefits to local air quality; and

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

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

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

London Environment Strategy

2.16 The most recent London Environment Strategy which replaced Mayor's Air Quality Strategy (MAQS) for London was published in August 2017. The overarching aim of the Strategy is to reduce pollution concentrations and tackle the most urgent environmental challenges facing our city, as well as safeguard London's environment over the longer term. We need to ensure that London is greener, cleaner and ready for the future. The Strategy commits to the continuation of measures identified in the 2010 MAQS and sets out a series of additional measures.

*"**Policy 4.1.1** Make sure that London and its communities, particularly the most disadvantaged and those in priority locations, are empowered to reduce their exposure to poor air quality;*

***Policy 4.1.2** Improve the understanding of air quality health impacts to better target policies and action;*

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

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

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

Policy 4.3.2 *The Mayor will encourage the take up of ultra-low and zero emission technologies to make sure London's entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines;*

Policy 4.3.3 *Phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality."*

Local Planning Policy

Camden Local Plan (2017)

2.17 London Borough of Camden (LBoC) Local Plan 2017 covers the period 2016-2031 and sets out the Council's planning policies for the borough.

2.18 Policy CC4, provides LBB's 'Air Quality' strategy:

"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.

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 an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan."

Camden Planning Guidance (CPG): Air Quality

2.19 In accordance with CPG, an Air Quality Assessment is required where the following conditions occur:

- *Major applications where occupants will be exposed to poor air quality (along a busy road, diesel railway lines or in a generally congested area);*

- *development that has potential to significantly change road traffic on a busy road;*
- *the development has more than 75 new residences;*
- *commercial developments with a floorspace of 2,500 sqm or more;*
- *developments that include biomass boilers or CHP (combined heat and power) and connections to existing decentralised energy networks (whereby the increased capacity is not already covered by an existing AQA);*
- *substantial earthworks or demolition; and*
- *development that introduces sensitive uses into an area of poor air quality.*

2.20 Table 2.2 indicates the triggers when air quality needs to be assessed as part of a planning application.

Criteria met →				→ Assessments required		
Scale	***Area of poor air quality[1]***	***Scheme brings sensitive receptors***	***Scheme brings air quality impacts [2]***	***Air Quality Assessment type***	***Air Quality Neutral***	***Construction and Demolition Impacts***
Major	Yes	Yes	Yes	Detailed	Required	Required
			No			
		No	Yes	Detailed		
			No	Basic		
	No	Yes	Yes	Detailed		
			No	Basic		
		No	Yes	Detailed		
			No	Basic		
Minor	Yes	Yes	Yes	Detailed	*Not required*	*[3]May be required*
			No	Basic		
		No	Yes	Basic		
			No	*Not required*		
	No	Yes	Yes	Detailed		
			No	*Not required*		
		No	Yes	Basic		
			No	*Not required*		

Notes::

1 *Area of poor air quality - an area with NO_2 or PM_{10} concentrations within 5% below the air quality objective, 38 µg/m³ (micrograms per cubic metre).*

2 *Air quality impacts - Produces changes in emissions from building sources, small industrial processes (including generators for emergency backup power, Short Term Operating Reserve and similar), or vehicle movements. (STOR power generators are those used intermittently to supply intensive amounts of electricity to the grid at short notice)*

3 *An assessment for demolition and construction impacts may be required for certain minor applications, such as basements.*

Table 2.2: Air Quality Assessment Triggers

Camden Clean Air Strategy 2019 – 2034

2.21 The Clean Air Strategy sets out Camden's long-term vision for improving air quality and protecting public health from the effects of air pollution.

2.22 The long-term strategic commitments for improving air quality in Camden are:

- *Camden's air quality programme, its strategies, action plans, projects and policies will be guided by the defining principles;*
- *Camden Council will commit to achieving the most stringent evidence-based air quality targets available, in as short a timeframe as possible – currently the World Health Organisation (WHO) 2021 guidelines;*
- *Camden's work to improve air quality will be empirical, data-led and evidence-based;*
- *We will ensure the Camden's air quality and climate programmes are interlinked;*
- *We will measure and report on changes in air quality (resulting from our actions or otherwise) with transparency and openness;*
- *We will not be afraid to deviate from the norm and to push beyond statutory obligations or legal limits if these do not go far enough in protecting public health; and*
- *Camden will adopt a participatory approach in developing our action plans, strategies and other programmes of work to improve air quality.*

2.23 The LBoC seek to achieve the updated WHO's air quality guidelines throughout the borough by 2034 at the latest for annual mean pollutant concentrations:

- NO_2: 10 µg/m^3 by 2034
- PM_{10}: 15 µg/m^3 by 2030
- $PM_{2.5}$: 5 µg/m^3 by 2034

2.24 Additionally, LBoC have set interim targets for the pollutants to measure ongoing progress as below with limits representing annual mean pollutant concentrations:

- NO_2: 30 µg/m^3 by 2026 and 20 µg/m^3 by 2030
- PM_{10}: 20 µg/m^3 by 2026
- $PM_{2.5}$: 10 µg/m^3 by 2030

Camden Clean Air Action Plan 2023 - 2026

2.25 Camden's AQAP details the following priorities in relation to new developments.

Priority 1 'Construction and Development' i

- *Reducing emissions from non-road mobile machinery (NRMM);*

- *Reduce emissions from construction generators;*
- *Reduce emissions from construction and demolition processes; and*
- *Reduce emissions from road vehicles servicing construction sites.*

Priority 2 'Buildings'

- Reduce emissions from building heating systems*;*
- *Reduce emissions from backup diesel generators ; and*
- *Reduce emissions from wood burning.*

Key Guidance Documents

Mayor of London Supplementary Planning Guidance: The Control of Dust and Emission During Construction and Demolition 2014 (MOL SPG)

2.26 This guidance provides advise, methodology and criteria to assess the dust impacts that arise from construction activities. This assessment evaluates the impact of dust soils and human health impacts during the demolition, earthworks, construction and trackout activities. The methodology is replicated in Appendix A of this report.

Land Use Planning and Development Control: Planning for Air Quality (EPUK-IAQM, 2017)

2.27 This guidance includes a method for screening the requirement for an air quality impact assessment and whether a detailed assessment is required. The methodology is reproduced in Appendix B of this report.

Local Air Quality Management Technical Guidance (LAQM.TG22)

2.28 This technical guidance is used by local authorities in their review and assessment work. LAQM is a statutory process through which local authorities are required to monitor, assess, and take actions to improve local air quality.

2.29 Within this guidance, Box 1.1 contains examples where air quality objectives should apply. Annual mean objectives for NO_2 and PM_{10} should apply at locations where members of the public might be regularly exposed, including building façades of residential properties, school, hospitals and care homes.

2.30 The following impacts should be assessed with the consideration of cumulative effects from other planned or proposed developments within the area:

- Impact of the proposed development upon the local air quality; and
- The impact of local air quality on the receptors using the development.

3.0 BASELINE CONDITIONS

3.1 Baseline data was gathered from the following sources:

- LBoC's 2022 Air Quality Annual Status Report (ASR);
- DEFRA's UK AIR website; and
- DEFRA's national air quality background maps 2018

Local Air Quality Management

3.2 As required by the Environment Act (1995), LBoC has undertaken a review and assessment of air quality within their administrative area. This process concluded that there are exceedances of the annual mean NO_2 and 24-hour mean PM_{10} concentrations above AQOs within the borough. As such, an AQMA has been declared as Camden AQMA encompassing "*The whole borough."*

3.3 The site is located within the Camden AQMA and, as a result, there is the potential for the development to introduce future site users to elevated concentrations of NO_2 and PM_{10}.

Air Quality Monitoring Data

3.4 Monitored data was taken from LBoC's 2022 Air Quality ASR. Concentrations measured in 2020 should be perceived with caution due to the COVID-19 pandemic where lockdown would have disrupted usual traffic patterns in the UK. These concentrations are likely to be lower than expected in an ordinary year.

Automatic Monitoring Locations

3.5 LBoC operated five automatic monitoring stations throughout the administrative boundary in 2022. BL0 is the closest monitoring station, approximately 270 m from the site, with CD9 approximately 900 m from the site. Recent data for these sites are depicted in Table 3.1.

3.6 Table 3.1 shows that NO_2 concentrations measured at BL0 have not exceeded annual AQOs of 40 µg/m^3 in recent years, nor the Camden's interim target of 30 µg/m^3 in 2022. There were however exceedances of relevant AQOs and Camden target at CD9 from 2018 to 2022. It is important to note that there has been a significant decline in NO_2 concentrations at both monitoring sites from 2018 and 2019 (pre pandemic) to 2022 (post pandemic)..

3.7 There have been no exceedances of the 1-hourly mean NO_2 AQO of 200 µg/m^3 at BL0 in recent years, however exceedances have been reported at CD9 in recent years. These e exceedances were below the threshold of 18 times per year and therefore do not breach the AQO.

3.8 PM10 concentrations measured at BL0 and CD9 have not exceeded annual AQOs of 40 µg/m^3 in recent years. Concentrations at BL0 were below Camden's interim target of 20 µg/m^3 from 2018 to 2022. There were, however, exceedances of Camden target at CD9 in 2018, 2019, and 2022. Concentrations have shown a decrease from 2019 (pre pandemic) to 2022 (post pandemic).

3.9 Both BL0 and CD9 have exceeded the PM10 24-hourly objective of 50 µg/m^3 in recent years. However, the figures are below the objective threshold of 35 times per year and therefore do not breach the AQO.

3.10 Annual $PM_{2.5}$ concentrations measured at CD9, show that there have been exceedances of the interim AQO of 12 µg/m^3 and the 2040 AQO, along with Camden's interim target of 10 µg/m^3. Concentrations have shown a decrease from 2018 and 2019 (pre pandemic) to 2022 (post pandemic).

3.11 BL0 is located in a park and is likely to underestimate concentrations at the proposed site. CD9 is located on a busier road (A501) than Old Gloucester Street, which is likely to significantly overestimate concentrations expected at the proposed development.

Non-Automatic Monitoring Data

3.12 LBoC operated 310 passive monitoring stations (diffusion tubes) in 2022. Table 3.2 shows monitoring station results within 300 m of the proposed development that were operational in 2022. The monitoring locations in Table 3.2 are arranged according to their proximity to the site.

3.13 Table 3.2 shows that there have been no exceedances of the annual NO2 AQO of 40 µg/m^3, except at CAM182 in 2018 and 2019, and at CAM189 in 2018. There have been no exceedances of the AQO at this monitoring location since 2019.

3.14 It should be noted that none of the monitoring sites listed in Table 3.2 exceeded Camden's interim target of 30 µg/m^3 in 2022, except for CAM60, which has slightly exceeded this target.

3.15 The most indicative monitoring location is Site ID CAM182, located approximately 276 m northeast of the development along Grenville Street. This is a two-way road and is slightly busier than Old Gloucester Road. Both roads contain canyon features. As such, the concentration of NO_2 at the site is expected to be similar to that at CAM 182.

3.16 In addition, the monitoring stations listed in Table 3.2 are located on busier roads than the proposed development yet have recorded concentrations lower than Camden's interim target of 30 µg/m^3, with the exception of CAM60, which is slightly exceeded the target.

Site ID	Site Name	Site Type	NGR		Measurement	Air Pollutants	Annual Mean Concentrations (µg/m^3)				
			X	Y			2018	2019	2020	2021	2022
BL0	London Bloomsbury (Russell Square Gardens)	Urban Background	536473	174128	Annual	NO_2	36	32	28	27	26
					1-Hourly Exceedances	NO_2	0	0	0	0	0
					Annual	PM_{10}	17	18	16	16	17
					24-Hour Exceedances	PM_{10}	1	9	4	0	5
					Annual	$PM_{2.5}$	10	11	9	9	9
CD9	Euston Road	Roadside	529878	182648	Annual	NO_2	**82**	**70**	**43**	**48**	**45**
					1-Hourly Exceedances	NO_2	18	7	0	1	2
					Annual	PM_{10}	**21**	**22**	18	19	**21**
					24-Hour Exceedances	PM_{10}	2	8	2	2	6
					Annual	$PM_{2.5}$	**15**	**14**	**11**	**11**	**12**

Notes:

- Exceedances of the annual mean AQO are shown in **bold**.
- Exceedances of the NO_2 annual mean above AQO of 60 µg m^{-3}, are likely to exceed the 1-hourly NO_2 AQO in accordance with LAQM.T22. This is shown in **bold and underlined.**

Table 3.1: Automatic Monitoring Results

Site ID	Site Name	NGR		Site Type	Annual Mean NO_2 Concentrations ($\mu g/m^3$)				
		X	Y		2018	2019	2020	2021	2022
CAM182	Torrington-Tavistock/Midland-Judd 4 - Grenville Street	530386	182171	Roadside	**45.73**	**43.83**	31.97	27.61	29.57
CAM59	Grays Inn Road South 2 - John Street	530823	182079	Roadside	-	-	-	25.29	26.31
CAM15	HSS Phase 4&5 3 - Ecole Jeannine Manuel - Bedford Square north (opposite side to school)	529805	181703	Roadside	-	-	-	24.09	24.31
CAM60	Grays Inn Road South 3 - Roger Street	530884	182124	Roadside	-	-	-	27.86	30.53
CAM58	Grays Inn Road South 1 - Northington Street / King's Mews	530915	182046	Roadside	-	-	-	23.53	24.59
CAM189	Torrington-Tavistock/Midland-Judd 11 - Tavistock Place	530104	182388	Roadside	**46.58**	39.95	32.22	29.64	29.67

Notes:

Exceedances of the Annual AQO are highlighted in **bold.**

Table 3.2: NO_2 Diffusion Tube Results

LAEI Air Quality Modelling Maps

3.17 The London Atmospheric Emissions Inventory (LAEI) 2019 have used the latest data sources (emission factors, activity data, etc) to estimate ground level concentrations of key pollutants across Greater London for the years 2019, 2025 and 2030.

3.18 Figures 3.1 to 3.3 show the modelled concentrations of NO_2, PM_{10} and $PM_{2.5}$ at the proposed development site in 2019 and 2025.

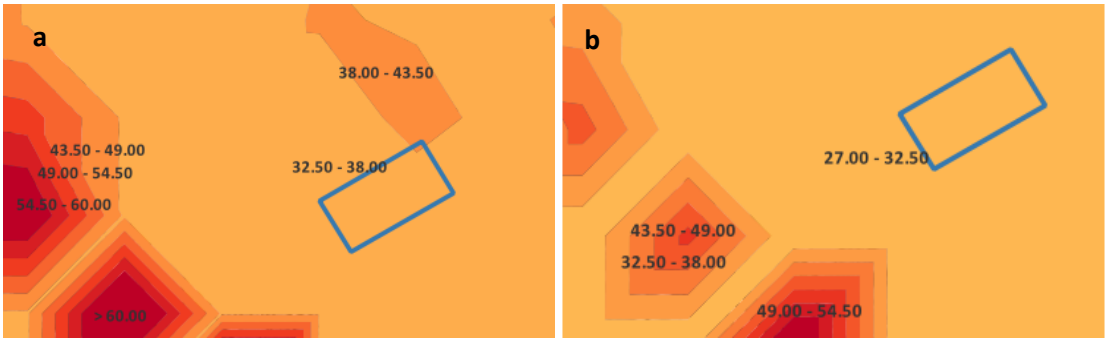

Figure 3.1: Modelled Annual Mean NO_2 Concentrations in (a) 2019 and (b) 2025

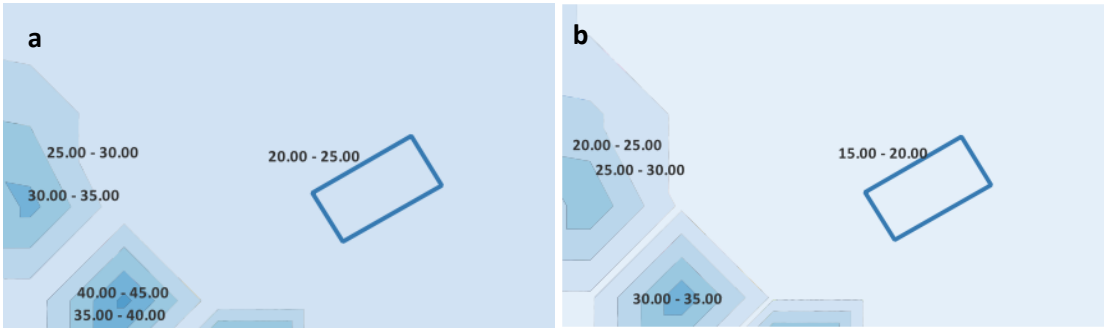

Figure 3.2: Modelled Annual Mean PM_{10} Concentrations in (a) 2019 and (b) 2025

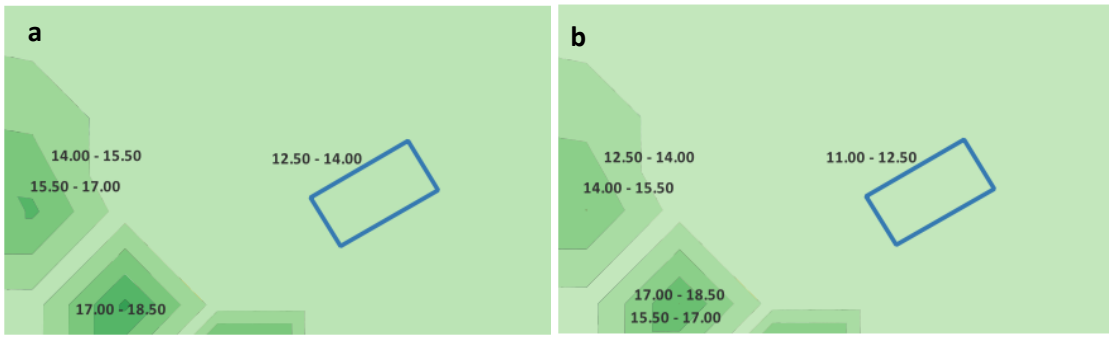

Figure 3.3: Modelled Annual Mean $PM_{2.5}$ Concentrations in (a) 2019 and (b) 2025

3.19 Figure 3.1a indicates that the site is located in an area where the annual mean NO_2 concentrations are between 32.5 and 38 µg/m^3 across the site in 2019. These decrease to 27 to 32.5 µg/m^3 in 2025 as shown in Figure3.1b. Therefore, the annual mean AQO of 40 µg/m^3 is not likely to be exceeded at the site. The predicted concentrations in 2025, however, exceed

Camden's interim target of 30 µg/m^3. As a result, NO_2 concentrations at the site will likely exceed this target in 2025.

3.20 Figure 3.2a indicates that the site is located in an area where the annual mean PM_{10} concentrations are between 20 and 25 µg/m^3 across the site in 2019. These decrease to 15 to 20 µg/m^3 in 2025 as shown in Figure 3.2b. Therefore, the annual mean AQO of 40 µg/m^3 and Camden's interim target of 20 µg/m^3 are not likely to be exceeded at the site in 2025.

3.21 Figure 3.3a indicates that the site is located in an area where the annual mean $PM_{2.5}$ concentrations are between 12.5 and 14 µg/m^3 across the site in 2019. These decrease to 11 to 12.5 µg/m^3 in 2025 as shown in Figure 3.3b. Therefore, the annual mean interim AQO of 12 µg/m^3 is unlikely to be exceeded at the site. Although the 2040 AQO and Camden's interim target of 10 µg/m^3 is likely to be exceeded in 2025.

DEFRA Mapped Background Concentrations

3.22 Predictions of background pollutant concentrations on a 1km-by-1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality.

3.23 The proposed development site is located in grid square NGR: 530500, 181500. Data for this location was downloaded from the DEFRA website for the purpose of this assessment and is summarised in Table 3.3.

Pollutant	Predicted Background Concentration (µg/m^3)		
	2019	2022	2025
NO_X	**83.10**	**74.17**	**69.53**
NO_2	**44.19**	**40.56**	38.51
PM_{10}	19.94	18.89	18.23
$PM_{2.5}$	**12.94**	**12.23**	**11.75**

Notes:

- Exceedances of Annual Air Quality Objectives are highlighted in **bold.**

Table 3.3: DEFRA Mapped Background levels

3.24 As shown in Table 3.3, DEFRA predicted background concentrations of NO_x exceed the relevant AQOs of 30 µg/m^3 in all specified years.

3.25 Annual mean NO_2 concentrations are predicted to be above AQO of 40 µg/m^3 in 2019 and 2022, and Camden's interim target of 30 µg/m^3 in all years mentioned. The concentration will be below the AQO in 2025 but will remain above Camden's interim target.

3.26 Predicted annual mean concentrations of PM_{10} are below the AQOs of 40 µg/m^3 and Camden's interim target of 20 µg/m^3 in all years.

3.27 Predicted annual mean concentrations of $PM_{2.5}$ are above the AQO interim target of 12 µg/m^3 and Camden's interim target of 10 µg/m^3 in all years.

3.28 Overall, there has been a general decline in pollutant concentrations over the years.

Monitoring and Modelling Summary

3.29 DEFRA's predicted NO_2 concentrations are similar to those at CAM182 and LAEI in 2019. However, are higher than results recorded in 2022. The LAEI's modelled NO_2 concentrations and DEFRA's concentrations vary in 2025.

3.30 DEFRA's predicted PM_{10} concentrations are higher than those recorded at BL0 in 2019 and 2022. The LAEIs modelled PM_{10} concentrations are similar to monitored data at BL0 in 2019. Therefore, LAEIs modelled concentrations are expected to provide indicative concentration for the site in 2025. Additionally, DEFRA's predicted PM_{10} concentrations are similar to LAEI's modelled concentrations in 2025.

3.31 DEFRA's predicted $PM_{2.5}$ concentrations similar to monitored data in 2022. The LAEIs modelled $PM_{2.5}$ concentrations are similar to monitored data at BL0 in 2019. Therefore, DEFRA and LAEIs modelled concentrations are expected to provide indicative concentration for the site in 2025.

3.32 Based on this information it is expected that the LAEI's modelled concentrations are expected to be representative of the proposed development area in 2025.

Air Quality Focus Area

3.33 The GLA has identified 187 Air Quality Focus Areas (AQFAs) within London. These are locations where the annual mean NO_2 concentrations breach the annual AQO, and where human exposure to air pollution is high. AQFAs are tools to help London Boroughs to target action in the most problematic areas.

3.34 Five of these AQFAs are located within the LBC. These are:

- Kilburn Town Centre;
- Swiss Cottage from South Hamstead to Finchley Road Station;
- Camden High Street from Mornington Crescent to Chalk Farm and Camden Road;
- Marylebone Road from Marble Arch/Euston/King's Cross Junction; and
- Holborn High Street and Southampton Row Junction.

3.35 Figure 3.5 shows the development site in relation to AQFAs. The figure shows that the proposed development site is not located within AQFAs. 'Holborn High Street and Southampton Row Junction' is approximately 315 southeast of the site.

4.0 CONSTRUCTION PHASE ASSESSMENT

4.1 There is the potential for air quality impacts as a result of the construction and operation of the proposed development.

4.2 *The Control of Dust and Emissions from Construction and Demolition; Supplementary Planning Guidance* assessment methodology has been used to determine the potential dust emission magnitude for construction activities. These are assessed in the following sections.

Sensitive Receptors

4.3 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for construction dust impacts in the following Sections.

4.4 Based on the criteria shown in Table A2, Appendix A, the sensitivity of the receiving environment to potential dust impacts was considered to be high. This was because users would expect to enjoy a high level of amenity.

4.5 Ecological receptors were analysed using Magic Maps website which provides authoritative geographic information about the natural environment from across government. This application is managed by Natural England.

4.6 The site boundary and trackout route are not within 50 m of an ecological receptor. As a result, ecological receptors have been screened out.

Construction and Trackout Dust Impacts

4.7 Receptors sensitive to potential dust impacts during, demolition, earthworks and construction were identified from a desk-top study of the area up to 350 m from the development boundary. These are summarised in Table 4.1.

Distance from Site Boundary (m)	Approximate Number of High Sensitivity Receptors
Less than 20	More than 100
Less than 50	More than 100
Less than 100	More than 100
Less than 350	More than 100

Table 4.1: Earthworks and Construction Activities Dust Sensitive Receptors

4.8 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50 m from site access route. These are summarised in Table 4.2.

4.9 The construction vehicle will access the site via Old Gloucester Street, and egress via Queen Square onto Boswell Street.

Distance from Site Access Route (m)	Approximate Number of High Sensitivity Receptors
Less than 20	More than 100
Less than 50	More than 100

Table 4.2: Trackout Activities Dust Sensitive Receptors

4.10 Table 4.3 shows the sensitivity of the surrounding area in relation to dust soiling and human health for each of the construction activities.

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Construction	Earthworks	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Medium

Table 4.3: Sensitivity of the Surrounding Area

Assessment of Potential Dust Emission Magnitude

4.11 The undertaking of activities such as cutting, construction and storage of materials and landscaping has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from haul road and highway surfaces.

4.12 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

4.13 The wind direction is predominantly southwesterly. As such, properties to the northeast of the site would be most affected by dust emissions.

4.14 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 350 m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

4.15 There is currently no data available on the construction-based activities at present. Therefore, professional judgment has been used to assess each activity.

Demolition

4.16 A number of existing wall structures will be removed from the basement, ground floor, and first floor. It is estimated that the building volume to be demolished will be less than 20,000 m3. The height of demolition will be less than 10 m and there is no concrete crushing expected on site.

4.17 In accordance with the criteria outlined in Table A1, Appendix A, the magnitude of potential dust emissions from demolition is therefore small.

Earthworks

4.18 Earthworks are expected to involve excavation of the basement to the rear of the site. The British Geological Survey website informs that the soil type beneath the site is London Clay Formation consisting of sand, silt and clay. The total area of the site is less than 2,500 m2. Due to the size of the site area, it is expected there will be less than 5 HGVs active at any one time. Material moved will be less than 10,000 tonnes.

4.19 In accordance with the criteria outlined in Table A1, Appendix A, the magnitude of potential dust emissions from earthworks is therefore small.

Construction

4.20 Construction activities will involve basement extension at the rear of the building. The total building volume is less than 25,000 m3 and will include varying materials to construct and alter the building. Concrete batching and sandblasting are not expected to take place onsite.

4.21 In accordance with the criteria outlined in Table A1, Appendix A, the magnitude of potential dust emissions from construction is therefore small.

Trackout

4.22 Trackout activities will involve delivery and removal of materials. There will be no unpaved road. Dust will primarily be generated as a result of the transport of dusty materials onto and off of the site. It has been assumed that given the size of the development there are likely to be less than 10 HDV movements per day.

4.23 In accordance with the criteria outlined in Table A1, Appendix A, the magnitude of potential dust emissions from trackout is therefore small.

Risk of Impacts

4.24 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phases, prior to mitigation.

4.25 Table 4.4 provides a summary of the risk of impacts for the proposed development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

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

Table 4.4: Summary of Potential Unmitigated Dust Risks

4.26 As indicated in Table 4.4, the highest risk for dust generating from demolition is a medium risk level. The highest risk for dust generating from for earthworks, construction, and trackout activities is a low risk level. The overall dust risk level is classed as a medium risk for all non-specified activities not listed in Table 4.4.

4.27 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phases.

Mitigation and Residual Effects

4.28 The MOL SPG provides a number of potential mitigation measures to reduce impacts during the construction phase. These measures have been adapted for the development site as summarised in Table 4.5.

4.29 The mitigation measures can be reviewed prior to the commencement of construction works incorporated into the existing the strategies as applicable.

4.30 Assuming the relevant mitigation measures outlined in Table 4.5 are implemented, the residual effect from all dust generating activities is predicted to be not significant, in accordance with the MOL SPG guidance.

Issue	Control Measure
Site Management	• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. • Display the head or regional office information. • Record and respond to all dust and air quality pollutant emissions complaints. • Make the complaints log available to the local authority when asked. • Carry out regular site inspections to monitor compliance with air quality and dust control procedures, 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. • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
Preparing and Maintaining the Site	• Plan site layout: machinery and dust causing activities are located away from receptors. • 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 from site as soon as possible.
Operating Vehicle/ Machinery and Sustainable Travel	• Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone. • Ensure all NRMM comply with the standards set within this guidance. • 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 possible. • Impose and signpost a maximum-speed-limit of 10 mph on surfaced hauled routes and work areas. • Implement a Travel Plan that supports and encourages sustainable travel.

Issue	Control Measure
Operations	• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation (using recycled water where possible). • 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.
Waste Management	• Reuse and recycle waste to reduce dust from waste materials. • Avoid bonfires and burning of waste materials.
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). • Ensure water suppression is used during demolition operations. • Avoid explosive blasting, using appropriate manual or mechanical alternatives. • Bag and remove any biological debris or damp down such material before demolition.
Earthworks	• There are no mitigation measures available for low-risk dust impacts
Construction	• Avoid scabbling (roughening of concrete surfaces) if possible. • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Trackout	• Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Table 4.5: Fugitive Dust Mitigation Measures

5.0 AIR QUALITY IMPACT ASSESSMENT

Proposed Development Impact on Surrounding Area

5.1 An impact assessment has been undertaken in accordance with EPUK-IAQM guidance to understand the effect that the development will have upon air quality within the surrounding area.

Stage 1 Criteria

5.2 The first stage of the air quality impact assessment is to investigate the Stage 1 criteria, depicted in Table B1, Appendix B of this report.

5.3 The site area is approximately 300 m^2. The development is car free and electric gas boilers are proposed for the apartments. The cultural centre accommodation will all be heated and cooled via a VRF system. The back of the house and circulation areas will be heated by electric panel heaters.

5.4 Based on these results, the development has been screened out at stage 1. This means that the development is not expected to worsen air quality for the neighbouring community.

Surrounding Area Impact on Future Site Users

5.5 As detailed in Section 3, the most indicative monitoring location is CAM182, at which the annual mean NO_2 concentration was 29.57 µg/m^3 in 2022. The NO_2 concentration at the proposed development is expected to be similar to that recorded at CAM182.

5.6 Additionally, the proposed two residential apartments are located on the second and third floors of the building. Pollutant levels decrease with altitude; therefore, it is anticipated that NO_2 concentrations at the proposed residential receptors would be lower than those recorded at CAM182 in 2022. As such, it is anticipated that NO_2 concentrations at the proposed receptors will be below Camden's interim target of 30 µg/m^3.

5.7 Moreover, most of the monitoring sites listed in Table 3.2 have recorded concentrations less than 30 µg/m^3. At two of those monitoring locations with data available, the NO_2 concentration has decreased sharply from 2018 and 2019 (pre-pandemic) to 2022 (post-pandemic). Based on this data, it seems that the concentrations are on the decline, and it is anticipated that NO_2 will be below 30 µg/m^3 at the proposed development as well.

5.8 DEFRA's predicted background maps and LAEI's modelled concentrations both predicted NO_2 concentrations below their relevant AQOs in 2025, the opening year. Additionally, LAEI predicted NO_2 concentrations between 27 to 32.50 µg/m^3, but DFREA has predicted 38.51

µg/m^3 in 2025. Considering that the LAEI is more representative of the site than DEFRA, it is unlikely that NO_2 will exceed Camden's interim target in 2025.

5.9 Overall, based on the information presented, the impact of NO_2 on future site users will be non-significant.

5.10 DEFRA's predicted background maps and LAEI's modelled concentrations both predicted PM_{10} concentrations are below the relevant AQOs and Camden's interim target in 2025, the opening year. Therefore, it is unlikely that future site users will be exposed to high levels of PM_{10}. Based on the information presented, the impact of PM_{10} on future site users will be non-significant.

5.11 The LAEI modelling and DEFRA's predicted background concentrations of $PM_{2.5}$ do not exceed the interim AQO of 12 µg/m^3 in 2025. However, exceed the 2040 AQO and Camden's interim target limit in 2025 and therefore, mitigation measures are recommended. These are set out in Section 7. If these measures are implemented, the residual impact to future site users will be non-significant.

6.0 AIR QUALITY NEUTRAL ASSESSMENT

6.1 The London Plan Policy SI 1 requires development proposals within Greater London to be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (e.g., developments situated within an AQMA). This assessment has been undertaken in line with the *Air Quality Neutral London Plan Guidance* (AQN LPG). The methodology has been replicated in Appendix C.

Building Emissions Assessment

6.2 It is understood that electric boilers are proposed for the studio apartments, and a VRF system and electric panel heaters are proposed for the cultural centre accommodation. There are no gas systems or systems with combustion processes being proposed. Therefore, development will not include any NO_X emissions. Therefore, they have not been considered further in this assessment.

Transport Emissions Assessment

6.3 The proposed development is car free with no trips being proposed. Therefore, there will be no transport emissions produced by the proposed development and have not been considered any further within this assessment.

Summary

6.4 Based on the above, the development's building and transport emissions have been screened out. Therefore, the whole development is air quality neutral and therefore there is no need for additional mitigation measures or a financial contribution to offset the potential air quality impacts.

7.0 BEST PRACTICE MEASURES

Construction Phase

7.1 MOL SPG provides a number of potential mitigation measures to reduce impacts from the construction phase. Considering that demolition activity poses a **medium** risk dust impact and earthworks, construction, and trackout activities pose a **low** risk, mitigation measures are required. These have been adapted for the development site as summarised in Section 4.

7.2 These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan if required by LBoC.

Operational Phase

7.3 The Air Quality Impact Assessment screened out the development at stage 1. This means that the development is not expected to worsen air quality for the neighbouring community and was not assessed further. Additionally, no further mitigation measures are required.

7.4 Based on the assessment results, exposure of future site users to exceedances of NO_2 and PM_{10} AQOs and Camdem's interim targets is considered not likely for the following reasons:

- Measured annual mean NO_2 concentration at most indicative monitoring station, CAM182 was below Camden's interim target of 30 µg/m^3 in 2022.
- Predicted DEFRA background concentrations and LAEI modelled NO_2 and PM_{10} in 2025 are below the relevant AQOs.
- The proposed two apartments are located on the second and third floors of the building. Considering that pollutant levels decrease with distance from emission sources, which in this area are roads, it is anticipated that pollutant concentrations will be lower at the proposed residential receptors than at the monitoring stations.

7.5 Overall, based on the information presented, the impact of NO_2 and PM_{10} on future site users will be non-significant.

7.6 Predicted DEFRA background concentrations and LAEI modelled $PM_{2.5}$ in 2025 are above the AQO and Camden's interim target of 10 µg/m^3, therefore, exposure of future site users to exceedances of $PM_{2.5}$ is considered likely.

7.7 It is understood that there will be Mechanical Ventilation with Heat Recovery (MVHR) to all areas, with the exception of the residential units which will have Mechanical Extract Ventilation and openable windows.

7.8 MVHRs and openable windows should be equipped with $PM_{2.5}$ filters to prevent future site users from being exposed to elevated $PM_{2.5}$ levels.

8.0 CONCLUSIONS

8.1 Consulting Engineers Limited (CCE) were instructed by Nilkanth Estates Ltd to undertake an Air Quality Assessment in support of the planning application at 25 Old Gloucester Street, Camden, London WC1N 3AX.

8.2 The construction phase particulate matter and dust emissions were assessed in accordance with the MOL SPG methodology. Mitigation measures are recommended to minimise and control particulate matter and dust generated by demolition, earthworks, construction and trackout activities. If applied, the risk is predicted to be **negligible.**

8.3 A qualitative impact assessment of the operational impacts was undertaken which identified that **non-significant impacts** are expected as a result of the proposed development, in line with EPUK-IAQM guidance.

8.4 Based on the data from local monitoring stations, DEFRA's predicted background maps, and LAEI's modelled maps, **NO_2 and PM_{10} concentrations will not exceed their relevant AQOs and Camden's interim target limit** and impacts on future site users will be **non-significant**. Therefore, mitigation measures are not required.

8.5 DEFRA and LAEI's modelled maps indicate that $PM_{2.5}$ concentrations at the site will **not exceed the interim AQO**. However, **will exceed the 2040 AQO and Camden's interim target**. Therefore, mitigation measures are required.

8.6 **Mechanical ventilation with heat recovery systems and openable windows should be equipped with $PM_{2.5}$ filters**. Providing these **measures are implemented**, the impacts as a result of $PM_{2.5}$ on future site users will be **non-significant**.

8.7 An air quality neutral assessment was undertaken which screened out the requirement to assess the building and transport emissions. The building will contain electric boilers, a VRF system, and electric panel heaters are proposed for the cultural centre accommodation. The development is car-free and will not produce any trips. Overall, the whole development is **air quality neutral**.

8.8 Based on the assessment results and implementation of mitigation measures across the development site, **air quality is not considered a constraint** to planning consent for the proposed development.

9.0 DISCLAIMER

9.1 Create Consulting Engineers Limited disclaims any responsibility to the Client, and others in respect of any matters outside the scope of this report.

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10.0 REFERENCES

10.1 *Air Quality Neutral London Plan Guidance. Greater London Authority (2023)*

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10.3 *Camden Clean Air Strategy 2019-2034. London Borough of Camden (2022)*

10.4 *Camden Local Plan. London Borough of Camden (2017)*

10.5 *Camden Planning Guidance: Air Quality. London Borough of Camden (2021)*

10.6 *Clean Air Strategy 2019. Department for Environment, Food and Rural Affairs (2019)*

10.7 *Environment Act 2021 Secretary of State, The Welsh Ministers (2021).*

10.8 *Guidance on Land-Use Planning and Development Control: Planning for Air Quality. EPUK & IAQM, Moorcroft, Barrowcliffe. et al (2017)*

10.9 *London Borough of Camden Air Quality Annual Status Report for 2022*. London Borough of Camden (August 2023)

10.10 *London Environment Strategy, May 2018*. Mayor of London, Greater London Authority (2018)

10.11 *Local Air Quality Management Technical Guidance (LAQM.TG22)*, August 2022. Department for Environment, Food and Rural Affairs (2022)

10.12 *National Planning Policy Framework*. Ministry of Housing, Communities and Local Government (2023)

10.13 *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1)*. Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland (2007)

10.14 *The Control of Dust and Emissions from Construction and Demolition: Supplementary Planning Guidance*. Mayor of London, Greater London Authority (2014)

10.15 *The Environmental Target (Fine Particulate Matter) (England) Regulations 2023)*. Secretary of State, Department for Environment, Food and Rural Affairs (2023)

10.16 *The London Plan*. Mayor of London, Greater London Authority (2021)

APPENDICES

APPENDIX A

CONSTRUCTION PHASE ASSESSMENT METHODOLOGY

This section details the methodology and criteria used to assess the construction phase assessment in conjunction with Mayor of London's Supplementary Guidance (MOL SPG).

Construction Phase Assessment

There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the MOL SPG, 2014, "The Control of Dust and Emissions from Construction and Demolition; Supplementary Planning Guidance."

Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout

The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- The risk of health effects due to a significant increase in exposure to PM_{10}; and
- Harm to ecological receptors.

The assessment steps are detailed below.

Step 1

Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the site boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment should proceed to Step 2. Additionally, should ecological receptors be identified within 50m of the boundary site or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment should also proceed to Step 2.

Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated to a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table A1.

Magnitude	Activity	Criteria
Large	Demolition	• Total volume of building to be demolished 50,000m^3 • Potential dusty construction material (e.g., concrete) • Onsite crushing and screening • Demolition activities more than 20m above ground
	Earthworks	• Total site area greater than 10,000m^2 • Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size) • More than 10 heavy earth moving vehicles active at any one time • Formation of bunds greater than 8m in height • More than 100,000 tonnes of material moved
	Construction	• Total building volume greater than 100,000m^3 • On site concrete batching • Sandblasting
	Trackout	• More than 50 Heavy Duty Vehicle (HDV) trips per day • Potentially dusty surface material (e.g., high clay content) • Unpaved road length greater than 100m
Medium	Demolition	• Total volume of building to be demolished 20,000m^3 – 50,000m^3 • Potential dusty construction material, • Demolition activities 10-20m above ground level
	Earthworks	• Total site area 2,500m^2 to 10,000m^2 • Moderately dusty soil type (e.g., silt) • 5 to 10 heavy earth moving vehicles active at any one time • Formation of bunds 4m to 8m in height • Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	• Total building volume 25,000m^3 to 100,000m^3 • Potentially dusty construction material (e.g., concrete) • On site concrete batching

Magnitude	Activity	Criteria
	Trackout	• 10 to 50 HDV trips per day • Moderately dusty surface material (e.g., high clay content) • Unpaved road length 50m to 100m
Small	Demolition	• Total volume of building to be demolished less than 20,000m^3 • Construction material with low potential for dust release (e.g., metal cladding, or timber) • Demolition activities less than 10m above ground level • Demolition during wetter months
	Earthworks	• Total site area less than 2,500m^2 • Soil type with large grain size (e.g., sand) • Less than 5 heavy earth moving vehicles active at any one time • Formation of bunds less than 4m in height • Total material moved less than 20,000 tonnes • Earthworks during wetter months
	Construction	• Total building volume less than 25,000m^3 • Construction material with low potential for dust release (e.g., metal cladding or timber)
	Trackout	• Less than 10 HDV trips per day • Surface material with low potential for dust release • Unpaved road length less than 50m

Table A1: Construction Dust Magnitude

Step 2B defines the sensitivity of the area around the development site for construction, earthworks and trackout. The factors influencing the sensitivity of the area are shown in Table A2.

Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	• Users expect of high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended periods of time • Locations where members of the public are exposed over a time period relevant to the AQO for PM_{10} e.g., residential properties, hospitals, schools and residential care homes	• Internationally or nationally designated site e.g. Special Area of Conservation

Sensitivity	Examples	
	Human Receptors	Ecological Receptors
Medium	• Users would expect to enjoy a reasonable level of amenity • Aesthetics or value of their property could be diminished by soiling • 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 e.g., parks and places of work	• Nationally designated site e.g., Sites of Special Scientific Interest
Low	• Enjoyment of amenity would not reasonably be expected • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods. e.g., public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads	• Locally designated site e.g., Local Nature Reserve

Table A2: Examples of Factors Defining Sensitivity of an Area

The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts during the construction phase:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and the receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

These factors were considered in the undertaking of this assessment.

The sensitivity of the area to dust soiling effects on people and property is shown in Table A3.

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

Table A3: Area Sensitivity to Dust Soiling Effects on People and Property

Table A4 outlines the sensitivity of the area to human health impacts.

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
High	Greater than 32µg/m^3	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m^3	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m^3	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m^3	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m^3	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m^3	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the area to Human Health Impacts

Table A5 outlines the sensitivity of the area to ecological impacts.

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

Table A5: Area Sensitivity to Ecological Impacts

Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts. Table A6 outlines the risk category from demolition works.

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

Table A6: Dust Category from Demolition

Table A7 outlines the risk category from earthworks.

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

Table A7: Dust Category from Earthworks

Table A8 outlines the risk category from construction activities.

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

Table A8: Dust Category from Construction

Table A9 outlines the risk category from Trackout.

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

Table A9: Dust Risk Category from Trackout

Step 3

Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with negligible risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'. This has been described as negligible within this report to provide continuity between assessment terminologies.

The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. This has been considered throughout the assessment when defining predicted impacts.

APPENDIX B

OPERATIONAL PHASE ASSESSMENT METHODOLOGY

This section details the methodology and criteria used to screen the operational phase of the development in conjunction with EPUK-IAQM guidance.

Operational Phase Assessment

The proposed development includes sensitive land uses. As such, the proposed development has the potential to introduce the poor quality of air in the area and worsen the current local air quality.

Criteria has been used; based upon the guidance provided within the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance 'Land-Use Planning and Development Control: Planning for Air Quality.

A screening assessment has been undertaken to understand whether a simple or detailed assessment is required. A simple assessment relies on published information, without the quantification of impacts. A detailed assessment is completed with the aid of dispersion modelling to predict the concentrations at the development site and surrounding area.

Stage 1 Criteria

Initially the development is screened against stage 1 criteria as shown in Table B1.

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

Note: Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Table B1: Stage 1 Criteria

If the development contains any of the criteria shown in Row A of Table B1, in combination with any parameter of Row B, a Stage 2 screening assessment is required.

Stage 2 Criteria

Table B2 shows the screening criteria used to trigger an air quality assessment (Stage 2). Exceeding this criterion does not automatically lead to the requirement of a detailed assessment. If none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered as having an insignificant effect.

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g., traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. **NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.**	Typically, any combustion plant where the single or combined NO_X emission rate is less than 5 mg/sec* is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

NOTES:

* As a guide, the 5 mg/s criterion equates to a 450 kW ultra low NOx gas boiler or a 30 kW CHP unit operating at <95 mg/Nm^3. Users of this guidance should quantify the NO_X mass emission rate from the proposed plant, based on manufacturers' specifications and operational conditions.

Table B2: Indicative Criteria for Requiring an Air Quality Assessment

APPENDIX C

AIR QUALITY NEUTRAL ASSESSMENT METHODOLOGY

The London Plan Policy SI 1 requires development proposals within Greater London to be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (e.g., developments situated within an AQMA). This assessment has been undertaken in line with the *Air Quality Neutral London Plan Guidance* (AQN LPG).

Building Emissions Calculation

The Guidance sets out Building Emissions Benchmarks (BEB) based upon the Gross Internal Area (GIA m^2) and on-site emissions of NO_X over a year (gNO_X/m^2/annum). The benchmark NO_X emission rates are defined for different land uses and are dependent on the characteristics of the energy strategy adopted for the development. These are based on achievable emission rates for the type of technology used. The BEB for NO_X are presented in Table C1.

Developments that do not exceed these benchmarks will be considered to avoid any increase in NO_X emissions and be air quality neutral.

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

** Separate use classes for commercial uses, including retail and offices, have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the intended use is not specified, or where use class E has been specified, the benchmark for retail should be used.*

Table C1: Building Emissions Benchmark NO_X Emission Rates (gNO_X/m^2/annum)

Transport Emissions Calculation

The Guidance sets out Transport Emissions Benchmarks (TEB) based upon the number of trips per floorspace (GIA m^2) over the year (trips/m^2/year) for non-residential use, or the anticipated number

of trips per dwelling over the year (trips/dwelling/year) for residential use. Benchmark Trip Rates are based on data from Trip Rate Assessment Valid for London (TRAVL) and are defined for different land uses and different areas of London. The TEB are presented in Table C2.

The TEB only estimates car or light van trips generated by the development occupiers. These trips are likely to be generated by residents, customers or employees. The TEB does not include trips generated by deliveries and servicing, taxis or heavy vehicle movements from non-occupiers.

Developments that do not exceed these benchmarks will be considered to avoid any increase in trip rates and be air quality neutral.

Land Use*	Benchmark Trip Rates		
	Central Activities Zone (CAZ)	Inner London (excluding CAZ)	Outer London
Residential (including student accommodation and large-scale purpose-built shared living development)	68	114	447
Office / Light Industrial	2	1	16
Retail (Superstore)	39	73	216
Retail (Convenience)	18	139	274
Restaurant / Café	64	137	170
Drinking establishments	0.8	8	N/A
Hot food takeaway	N/A	32.4	590
Industrial	N/A	3.9	16.3
Storage and distribution	N/A	1.4	5.8
Hotels	1	1.4	6.9
Care homes and hospitals	N/A	1.1	19.5
Schools, nurseries, doctors' surgeries, other non-residential institutions	0.1	30.3	44.4
Assembly and leisure	3.6	10.5	47.2

** Separate use classes for commercial uses including retail and offices have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the separate use is not specified, or where use class E has been specified, the benchmark for office/light industrial should be used.*

Table 8.2: Benchmark Trip Rates

Table C2: Benchmark Trip Rates