100 Avenue Road

Air Quality Assessment

February 2025

REGAL

Report

100 Avenue Road, Camden

Air Quality Assessment

For Regal Avenue Road Limited

30 January 2025

Air Quality CONSULTANTS | PART OF Logika Group

Document Control

Project Title:	100 Avenue Road, Camden
Project Number:	J10-15285A-10
Client:	Regal Avenue Road Limited
Principal Contact:	Taylar Vernon
Document Title:	Air Quality Assessment
Document Number:	J10-15285A-10-2
Prepared By:	Lina Locatelli and Julia Burnell
Reviewed By:	Penny Wilson

Revision History

01	11/12/2024	First issue
02	30/01/2025	Second issue

Registered Office: 3rd Floor St Augustine's Court, 1 St. Augustine's Place Bristol BS1 4UD Tel: +44(0)117 974 1086

24 Greville Street, Farringdon, London, EC1N 8SS Tel: +44(0)20 3873 4780

First Floor, Patten House, Moulders Lane, Warrington WA1 2BA Tel: +44(0)1925 937 195

8-9 Ship St, Brighton and Hove, Brighton BN1 1AD Tel: +44(0)20 3873 4780

Avenue du Port, 86c Box 204, 1000 Bruxelles Tel: +44(0)20 3873 47840

Contents

Tables

Figures

1 Introduction

1.1 This report describes the potential air quality impacts associated with the residential-led, mixed-use development of 100 Avenue Road in Camden. The proposed development is described as:

"*Demolition of the existing building and redevelopment comprising residential units (Class C3) and flexible commercial, business and service use (Class E) and community use (Class F2(b)) with associated works including enlargement of the existing basement level to contain disabled car parking spaces and cycle parking, landscaping and access improvements*."

1.2 This report has been prepared to accompany the Section 73 amendment application for the Site.

1.3 The proposed development lies within a borough-wide Air Quality Management Area (AQMA) declared by London Borough of Camden (LBC) for exceedances of the annual mean NO_2 and 24-hour particulate matter (PM_{10}) objectives. The majority of the site is also located within the '*Swiss Cottage from South Hampstead to Finchley Road Station*' air quality Focus Area, one of 187 areas identified by the Greater London Authority (GLA) as locations that not only exceed the annual limit value for NO_2, but also have high levels of human exposure.

1.4 The proposed development will introduce new residential exposure into this area of potentially poor air quality, thus an assessment is required to determine the air quality conditions that future residents will experience. It will also generate additional traffic flows on local roads, which may impact on air quality at existing residential properties along the affected road network. The main air pollutants of concern related to road traffic emissions are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$).

1.5 An air quality assessment for the Site was previously undertaken in 2014 to accompany the original planning application for the proposed development (ref: 2014/1617/P). The assessment, which was undertaken by RSK, found that there were exceedances of the annual mean NO_2 objective up to and including floor three of the proposed development (as a result of the road traffic) and at the top of the part seven, part five storey building (as a result of the proposed CHP). However, with mitigation, it was concluded that the impact on air quality would not be significant.

1.6 The location and setting of the proposed development is shown in Figure 1, along with the relevant nearby Focus Areas.

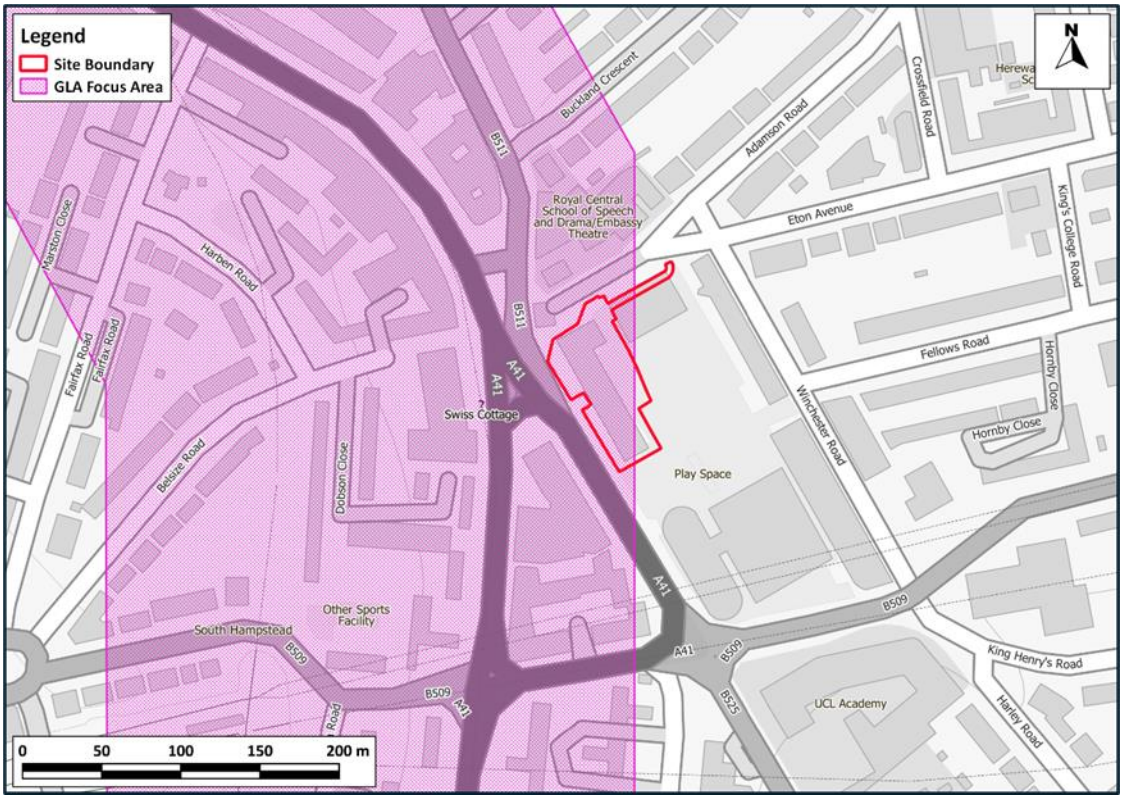


Figure 1: Proposed Development Setting in the Context of Air Quality

1.7 Air quality needs to be considered to ensure that the development does not generate any adverse impacts off site and to ensure that new residents/users are not exposed to exceedances of the air quality objectives.

1.8 The Implemented Permission includes a CHP. The revised energy strategy for the proposed development, subject to this Section 73 Amendment Application, will use as much on-site renewable energy as possible, including air-source heat pumps (ASHPs); there will be no centralised combustion plant and thus there will be no significant point sources of emissions within the proposed development. Back-up power will be provided by one onsite diesel generator, the emissions from which could impact upon air quality at nearby sensitive receptors. The main air pollutants of concern related to diesel generators are NO_2, PM_{10} and $PM_{2.5}$. Regardless, the overall emissions to air from energy plant will be smaller than the Implemented Development.

1.9 The Greater London Authority's (GLA's) London Plan (GLA, 2021) requires new developments to be air quality neutral. The air quality neutrality of the proposed development has been assessed following the methodology provided in the latest GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023).

1.10 The GLA has also released Supplementary Planning Guidance on the Control of Dust and Emissions from Construction and Demolition (GLA, 2014). The SPG outlines a risk assessment approach for construction dust assessment and helps determine the mitigation measures that will need to be

applied. A construction dust assessment has been undertaken and the appropriate mitigation has been set out.

1.11 This report has been prepared taking into account all relevant local and national guidance and regulations, including the LBC Air Quality Camden Planning Guidance (CPG).

2 Policy Context

2.1 All European legislation referred to in this report is written into UK law and remains in place. The following Policy, Legislation and Guidance has been followed when preparing this document. For details of each, please see Appendix A2.

- Air Quality Strategy 2007
- Air Quality Strategy 2023
- Clean Air Strategy 2019
- Environment Act 2021
- Environmental Improvement Plan 2023
- Planning Policy, including NPPF
- London-Specific Policies
    i) The London Plan
    ii) London Environment Strategy
    iii) Mayor's Transport Strategy
    iv) GLA SPG: The Control of Dust and Emissions During Construction and Demolition
    v) GLA LPG: Air Quality Neutral
    vi) Air Quality Focus Areas
- Camden Planning Guidance (CPG) on Air Quality
- LBC Local Plan
- Air Quality Action Plans
    i) National Air Quality Plan
    ii) LBC combined Clean Air Strategy and Air Quality Action Plan (CAAP)

3 Pollutants of Concern

UK Criteria

3.1 The main air pollutants of concern are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$). These are the pollutants most related to road traffic emissions and known to have adverse health impacts. UK-wide objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter.

3.2 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The GLA explains where these objectives will apply in London (GLA, 2019). The annual mean objectives for NO_2 and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals and care homes etc., the gardens of residential properties, school playgrounds and the grounds of hospitals and care homes. The 24-hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as at hotels. The 1-hour mean objective for NO_2 applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.

3.3 For $PM_{2.5}$, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value[1], originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

3.4 Defra has also recently set two new targets, and two new interim targets, for $PM_{2.5}$ concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by the end of 2040 (referred to as the annual mean concentration target or AMCT), with the interim target being a value of 12 µg/m^3 by the start of 2028[2]. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. By the end of 2040, overall population exposure to $PM_{2.5}$ should be reduced by 35% compared with 2018 levels (referred to as the population exposure reduction target or PERT), with the interim target being a reduction of 22% by the start of 2028.

3.5 In November 2024 Defra published Interim Planning Guidance on the $PM_{2.5}$ targets (Defra, 2024). This states that:

"The purpose of the targets is to improve air quality by reducing levels of $PM_{2.5}$ across the country, therefore improving public health. While achievement of the targets will be assessed at relevant monitoring sites, the targets apply to ambient (outdoor) air throughout England. Applicants and Local Planning Authorities should therefore consider the impact of developments on air quality in all ambient air, whether a monitor is present or not."

[1] EU Directive 2008/50/EC sets limit values for NO_2, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010). The limit values for NO_2 and PM_{10} are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values.

[2] Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m^3 would not exceed the 10 µg/m^3 target.

3.6 In order to address the new targets it is not sufficient to assess solely whether a scheme is likely to lead to an exceedance of a legal limit. Instead, developments need to implement appropriate mitigation measures from the design stage, ensuring the minimum amount of pollution is emitted and that exposure is minimised.

3.7 Pending publication of the new guidance, Defra advises applicants to provide evidence that they have identified key sources of air pollution within the scheme and taken appropriate action to minimise emissions of $PM_{2.5}$ and its precursors as far as possible. More detailed assessment is expected for development closer to populations and/or having higher emissions. Defra has posed two questions to be used as prompts to support the interim assessment process:

"How has exposure to $PM_{2.5}$ been considered when selecting the development site?; and

What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors?"

3.8 The GLA has set a target to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by 2030. This target was derived from an air quality guideline set by WHO in 2005. In 2021, WHO updated its guidelines, but the London Environment Strategy (GLA, 2018a) considers the 2005 guideline of 10 µg/m^3. While there is no explicit requirement to assess against the GLA target of 10 µg/m^3, it has nevertheless been included within this assessment.

3.9 The relevant air quality criteria for this assessment are provided in Table 1.

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

Pollutant	Time Period	Value
NO_2	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3 [a]
$PM_{2.5}$	Annual Mean	20 µg/m^3 [b]
	Annual Mean	10 µg/m^3 by 2030

[a] A proxy value of 32 µg/m^3 as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM_{10} objective are possible (Defra, 2022).

[b] There is no numerical $PM_{2.5}$ objective for local authorities (see Paragraph 3.3). Convention is to assess against the UK limit value which is currently 20 µg/m^3.

Camden Criteria

3.10 LBC has committed within their Air Quality CPG and CAAP to meeting the WHO guideline limits for NO_2, PM_{10} and $PM_{2.5}$, as discussed in paragraphs A2.34 and A2.35. However, the two documents quote different WHO limits; the CPG refers to the previous (2005) WHO limits to be met in 2030 while the CAAP refers to the current (2021) WHO limits to be met in 2034.

3.11 The commitment to meet the new WHO guidelines in the CAAP is described within the context of the Council's local air quality management; the CAAP states that "*We will not consider that we have achieved the WHO guideline objectives until every monitoring location at which the pollutants are measured records annual mean concentrations which meet the relevant standards*". The purpose of the CAAP is to help fulfil their requirements under the LAQM regime, rather than development control. The CAAP does not reference the WHO guidelines for planning, nor does the CAAP include any measures with respect to updating the Air Quality CPG to account for the latest WHO guidelines.

3.12 For the purpose of this assessment, the WHO guidelines outlined in the Air Quality CPG have been used as these relate to planning and are the guidelines quoted in the Council's Air Quality Proforma to be submitted to accompany planning applications (London Borough of Camden, 2023a). These guidelines are presented in Table 2 below. The target years for achievement as outlined in the Camdem CAAP have also been provided.

Table 2: Camden Air Quality CPG Criteria for NO_2, PM_{10}, and $PM_{2.5}$

Pollutant	Guideline Target (as an annual mean)	Target achievement year
NO_2	38 µg/m^3 [a]	-[b]
PM_{10}	20 µg/m^3	2026
$PM_{2.5}$	10 µg/m^3	2030

[a] While the WHO guideline is 40 µg/m^3, 38 µg/m^3 has been used in accordance with the Air Quality CPG which states that "consideration must be paid to uncertainty in NO_2 data, therefore 38µg/m^3 (the 40µg/m^3 WHO limit less 5%) shall be taken as the limit for this pollutant."

[b] No achievement target timeframe for NO_2 as a target of 38 µg/m^3 should have already been met.

4 Assessment Approach

Scope

4.1 The Air Quality Assessment for the Implemented Permission was completed by RSK in 2014. The scope, which was agreed with LBC, considered:

- Baseline characterisation of local air quality;
- Qualitative assessment of construction phase impacts;
- Dispersion modelling of air quality impacts of emissions from existing traffic upon future occupants of the proposed development; and
- Dispersion modelling of emissions from the proposed CHP and boilers within the development.

4.2 For this s73 Amendment Application, a site-specific air quality monitoring study has been carried out which replaces the need for dispersion modelling to determine the air quality impact of traffic emissions upon future occupants of the proposed development. The Energy Strategy for the s73 Amendment Application does not include CHP or boilers and therefore dispersion modelling of these sources is not longer necessary.

4.3 The scope of this assessment therefore covers an updated baseline characterisation and qualitative assessment of the construction phase impacts, as well as qualitative assessment of development traffic and emergency-generator impacts. In addition, an Air Quality Neutral assessment is provided.

Baseline

4.4 Existing sources of emissions and baseline air quality conditions within the study area have been defined using the following approaches:

- industrial sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2025a);
- information on existing air quality has been obtained by collating the results of monitoring carried out by the LBC and by undertaking a 6-month diffusion tube monitoring survey at the Site from May 2024 to November 2024; and
- background concentrations have been defined using Defra's 2021based background maps (Defra, 2025b). These cover the whole of the UK on a 1x1 km grid.

Construction Phase Impacts

4.5 The construction dust assessment considers the potential for impacts within 250 m of the site boundary, or within 50 m of roads used by construction vehicles. The assessment methodology follows the GLA's SPG on the Control of Dust and Emissions During Construction and Demolition (GLA, 2014), which is based on that provided by IAQM (2024).

4.6 This follows a sequence of steps:

- Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required.

- Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation.

- Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant effects.

4.7 Appendix A5 explains the approach in more detail.

4.8 Guidance from IAQM (2024) is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. This is the latest version of the guidance upon which the assessment methodology set out in the GLA guidance (GLA, 2014) is based (the GLA guidance advises that the latest version of the IAQM guidance should always be used). The assessment thus focuses on determining the appropriate level of mitigation so as to ensure that effects will normally be 'not significant'.

Operational Phase Impacts

Road Traffic

4.9 Environmental Protection UK (EPUK) and the Institute of Air Quality Management[3] recommend a two-stage screening approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions from road traffic generated by a development have the potential for significant air quality effects. The approach, as set out in Appendix A1, first considers the size of a development; if the development is for fewer than ten homes or covers less than 1,000 m^2 of other land uses and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

4.10 Since the proposed development is above the size criteria the potential impacts on air quality from traffic generated by the development needs to be considered. The EPUK/IAQM guidance has also set out screening criteria, below which it can be assumed that there will not be significant impacts on air quality. The criteria for inside an AQMA are a change in traffic flows of more than 100 Light Duty Vehicles (LDVs) as an Annual Average Daily Traffic (AADT) flow, or more than 25 Heavy Duty Vehicles (HDVs) as an AADT flow. Outside an AQMA, the criteria is a change of more than 500 AADT for LDVs or more than 100 AADT for HDVs.

4.11 The traffic flows generated by the proposed development have, therefore, been compared to these screening criteria. Where traffic flows generated by a development will be below the criteria, it can be concluded that there will be no significant effects on air quality.

Generator

4.12 The proposed development will include an all-electric energy strategy for the routine provision of power and heating. However, it is proposed that a single, 400kW diesel generator will be installed to provide back-up life safety power provision.

4.13 The impact of emissions generated by the routine testing and maintenance of the proposed diesel generator on air quality has been assessed qualitatively, taking account of the anticipated number of hours of operation, located and height of the exhaust flue and size of the generator. This has considered the approach outlined in EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017), as described in Appendix A1, of screening the emissions and the emissions parameters to determine

[3] The IAQM is the professional body for air quality practitioners in the UK.

whether an assessment is necessary. This screening approach requires professional judgement, and the experience of the consultants preparing the assessment is set out in Appendix A7.

'Air Quality Neutral'

4.14 The GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023) sets out guidance on how an 'air quality neutral' assessment should be undertaken. It also provides a methodology for calculating an offsetting payment if a development is not 'air quality neutral' and it is not possible to identify or agree appropriate and adequate mitigation.

4.15 The guidance provides a simplified assessment approach for car-free developments with an all-electric energy strategy, which has been followed in this report.

5 Baseline Conditions

Relevant Features

5.1 The proposed development is bounded on its western side by the Swiss Cottage tube station, Avenue Road and the Swiss Cottage/Finchley Road junction and gyratory. The site has a number of existing uses immediately adjacent to it; to the east is Swiss Cottage Open Space and Hampstead Theatre. To the south is a small park beyond which is the Swiss Cottage Leisure Centre and Swiss Cottage Library.

5.2 As part of the implemented permission for the site (re:2014/1617/P, as amended), the demolition works at the site have already been completed and so it is a cleared site with some temporary structures (portacabins).

5.3 The proposed development is located within an AQMA and an air quality Focus Area, as highlighted in Figure 1.

Industrial Sources

5.4 No significant industrial sources have been identified that are likely to affect the proposed development, in terms of air quality.

Local Air Quality Monitoring

5.5 LBC currently operates five automatic monitoring stations within its area, one of which is located approximately 80 m north west of the proposed development (CD1). The Council also operates a number of NO_2 monitoring sites using diffusion tubes prepared and analysed by Socotec UK (using the 50% TEA in acetone method). Monitoring sites within 500 metres of the site boundary of the proposed development have been considered within the assessment. Annual mean results for the years 2018 to 2023 are summarised in Table 3, while results relating to the 1-hour mean objective at CD1 are summarised in Table 4. Exceedances of the objectives are shown in bold. The monitoring locations are shown in Figure 2. The monitoring data for years 2018 to 2023 have been taken from LBC's 2023 Annual Status Report (LBC, 2024).

Table 3: Summary of Annual Mean NO_2 Monitoring (2018-2023) (µg/m^3)

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
CD1	Kerbside	Swiss Cottage (Finchley Road)	**54**	**43**	33	**44**	37	33
CAM77	Kerbside	Swiss Cottage	**62.3**	**50.9**	-	-	35.1	34.4
CAM39	Roadside	Broadhurst School - Greencroft Gardens	-	-	-	21.1	19.8	23.8
CAM168	Roadside	Adelaide Road/B509 UCL Academy	-	-	-	31.1	33.8	37.2
CAM169	Roadside	Avenue Road	-	-	-	26.5	26.1	28.8
CAM170	Roadside	Queens Grove	-	-	-	22.6	21.4	23.2
CAM171	Roadside	Elsworthy Road between Avenue Road and	-	-	-	25.5	24.5	25.6

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
		Wadham Gardens						
CAM174	Roadside	King Henry's Road between Adelaide Road and Harley Road	-	-	-	27.8	29.2	28.5
CAM175	Roadside	King Henry's Road between Lyttleton Close and Lower Merton Rise	-	-	-	24.3	22.8	23.5
Objective			40					

[a] Exceedances of the objectives are shown in bold.

Table 4: Number of Hours With NO_2 Concentrations Above 200 µg/m³

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
CD1	Kerbside	Swiss Cottage (Finchley Road)	2	1	0	2	0	0
Objective			18 [c]					

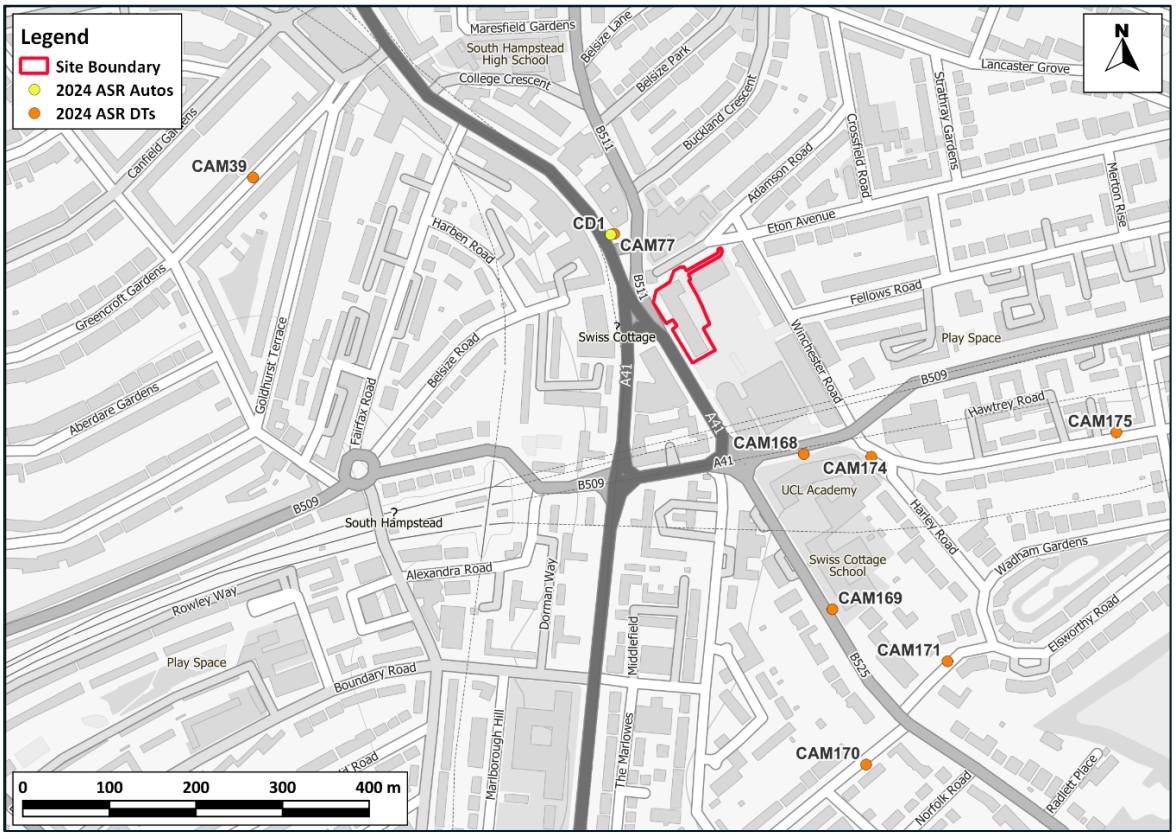


Figure 2: Monitoring Locations

5.6 The measured annual mean NO_2 concentrations exceeded the objectives in 2018, 2019 and 2021 at the CD1 kerbside automatic monitor. This monitor is located 80 m northwest of the proposed development, within 1m of the kerb of the A41 and adjacent to the Swiss Cottage/Finchley Road junction and gyratory. Pollutant concentrations would be expected to be higher at this location than the proposed development as it is closer to the A41. Nonetheless, in 2022 and 2023 measured annual mean NO_2 concentrations have been below the annual mean NO_2 objective and Air Quality CPG criteria at this monitor. The hourly NO_2 objective has also not been exceeded at CD1 between 2018 and 2023. Overall, there has been a general downward trend in annual mean NO_2 concentrations at this monitor since 2018. There has also been a large improvement in annual mean NO_2 concentrations in the vicinity of the proposed development since the previous air quality assessment for the Site was undertaken in 2014.

5.7 At all other monitoring sites (which only have data from 2021 onwards), annual mean NO_2 concentrations have been below the objective and Air Quality CPG criteria. As annual mean NO_2 concentrations measured at these diffusion tube monitoring sites are well below 60 µg/m^3, it is also unlikely that the 1-hour mean NO_2 objective will have been exceeded at these locations.

5.8 While 2020 and 2021 results have been presented in this Section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

5.9 The CD1 automatic monitoring station also measures PM_{10} and $PM_{2.5}$ concentrations. Annual mean results for the years 2018 to 2023 are summarised in Table 5, while results relating to the daily mean objective are summarised in Table 6. Concentrations have been well below the annual mean PM_{10} and $PM_{2.5}$ objectives since 2018 and met the Air Quality CPG criteria in 2023. The $PM_{2.5}$ concentrations also met the GLA target in 2023. As with NO2 concentrations, there has been an improvement in annual mean PM10 concentrations in the vicinity of the proposed development since the previous air quality assessment for the Site was undertaken in 2014.

Table 5: Summary of Annual Mean PM_{10} and $PM_{2.5}$ Monitoring (2018-2023) (µg/m^3)

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
PM_{10}								
CD1	Kerbside	Swiss Cottage	21	19	16	16	21	18
Objective			40					
$PM_{2.5}$								
CD1	Kerbside	Swiss Cottage	11	11	10	9	12	10
Objective/GLA target			20/10 [a]					

[a] The 20 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m^3 is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

Table 6: Number of Days With PM_{10} Concentrations Above 50 µg/m^3

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
CD1	Kerbside	Swiss Cottage	4	8	3	0	0	2

Site No.	Site Type	Location	2018	2019	2020	2021	2022	2023
Objective			35					

Site-specific Monitoring

5.10 To supplement the LBC monitoring, additional NO_2 monitoring was undertaken using diffusion tubes prepared and analysed by Gradko International (using the 50% TEA in acetone method) for a period of six months, between 23rd May 2024 and 27th November 2024. The diffusion tubes were mounted at six locations on the construction site hoarding (at the site boundary). In addition, triplicate diffusion tubes were co-located at the CD1 automatic monitor. The locations of the sites are shown in Figure 3.

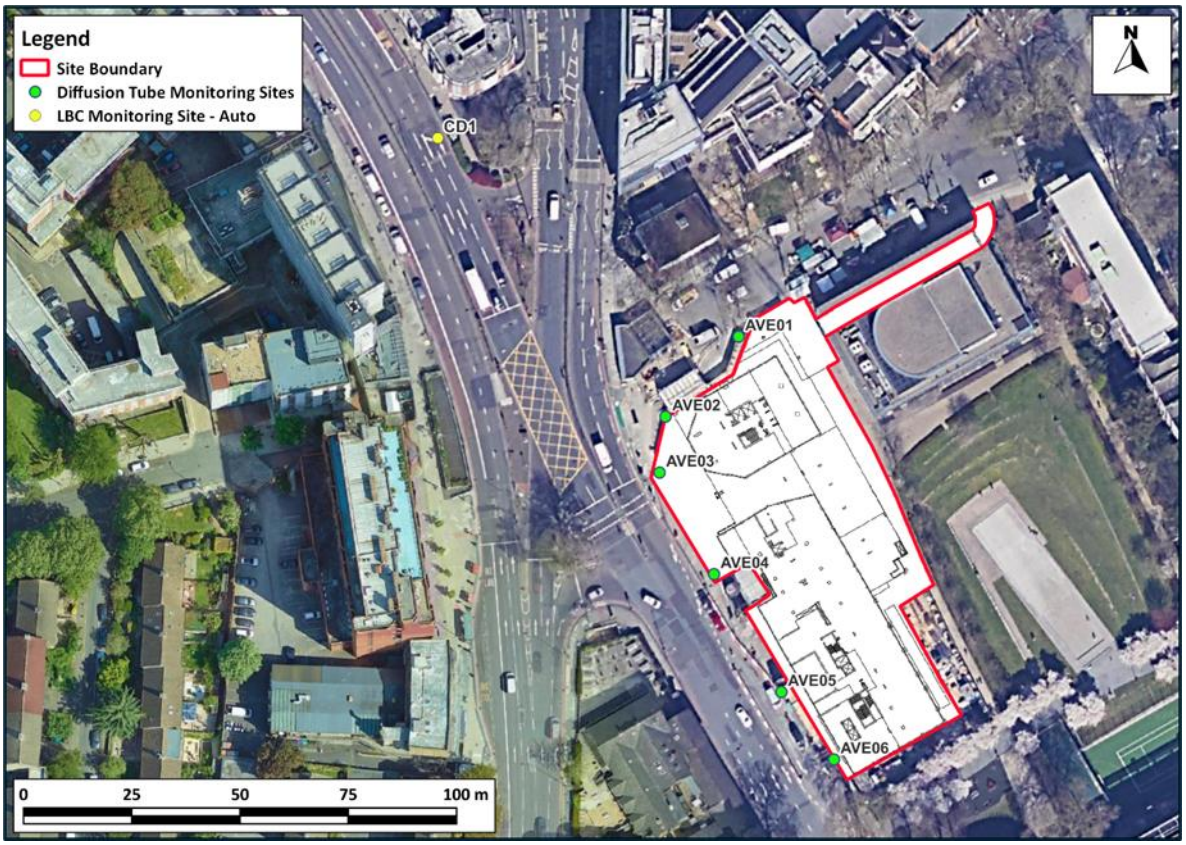


Figure 3: Project-specific NO_2 Diffusion Tube Monitoring Locations

Imagery ©2025 Airbus, Maxar Technologies, Map data ©2025. Contains data from Cartwright Pickard Architects drawing no. 1016-CPA-ZZ-ZZ-DR-A-0100.

5.11 In accordance with the LAQM.TG(22) guidance (Defra, 2022), the average NO_2 concentrations measured during the monitoring survey have been annualised to allow comparison with the annual mean objectives. Sites have been annualised to a 12-month period covering January to December 2024. Further details of annualization of the monitoring survey data is presented in Appendix A3.

5.12 Diffusion tubes are also known to show systematic bias in relation to automatic monitors, and it is therefore necessary to carry out a correction known as 'bias adjustment'. The annualised NO_2 concentrations have therefore been bias-adjusted using a local factor of 0.75 calculated using the data collected from triplicate diffusion tubes 'AVE07a/b/c' co-located with the LBC automatic monitor 'CD1', as presented in Appendix A4.

Results

5.13 The annualised and bias-adjusted annual mean NO_2 concentrations for the six sites on the Proposed Development boundary are shown in Figure 3. The raw monthly results and unadjusted period means are provided in Appendix A5.

Table 7: Annual Mean NO_2 Monitoring Results

Site ID	Annual Mean NO_2 Concentration (µg/m³)
AVE01	19.3
AVE02	23.8
AVE03	28.7
AVE04	30.0
AVE05	28.6
AVE06	37.4
Objective	**40 (60) [a]**

[a] A proxy value of 60 µg/m³ as an annual mean is used in this assessment to assess the likelihood of the 1-hour mean NO_2 objective being exceeded.

5.14 Annual mean NO_2 concentrations at all site-specific diffusion tube monitoring sites comply with the NO_2 objective and the Air Quality CPG criteria. Within the Site, the highest concentration (37.4 µg/m³) was measured at site 'AVE06', which is located directly adjacent to the A41, close to a bus stop. Concentrations were all well below 60 µg/m³, indicating that the 1-hour mean NO_2 objective is also unlikely to be exceeded (Defra, 2022).

Exceedances of Limit Value

5.15 There are several AURN monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean NO_2 limit value (Defra, 2023a). Furthermore, Defra's roadside annual mean NO_2 concentrations (Defra, 2025c), which are used to identify and report exceedances of the limit value, identify exceedances of this limit value in 2019 along many roads in London, including on Avenue Road adjacent to the proposed development. The Greater London Urban Area has thus been reported as exceeding the limit value for annual mean NO_2 concentrations. However, Defra's predicted concentrations for 2024 and 2028 (Defra, 2020) do not identify any exceedances within 1 km of the application site in these years. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

5.16 Defra's Air Quality Plan requires the GLA to prepare an action plan that will "*deliver compliance in the shortest time possible*", and the 2015 Plan assumed that a CAZ was required. The GLA has already implemented an LEZ and a ULEZ, thus the authority has effectively already implemented the required CAZ. These have been implemented as part of a package of measures including 12 Low Emission Bus Zones, Low Emission Neighbourhoods, the phasing out of diesel buses and taxis and other measures within the Mayor's Transport Strategy.

Background Concentrations

5.17 The 2024 and 2028 estimated Defra background NO_2 concentrations at the proposed development are set out in Table 8 and are all well below the annual mean objectives, the Air Quality CPG criteria and the GLA target in 2024 and 2028 (GLA, 2019).

Table 8: Estimated Annual Mean Background Pollutant Concentrations in 2024 and 2028 (µg/m³)

Year	NO_2	PM_{10}	$PM_{2.5}$
2024	21.0	16.7	9.0
2028	18.6	16.5	8.8
Objective / GLA target	40	40	20/10 [a]

[a] The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

Changes Since Implemented Permission Air Quality Assessment

5.18 The monitoring data presented in Table 9 shows how air quality has improved significantly since the 2012 baseline presented in the Air Quality Assessment for the Implemented Permission. Whilst the annual mean nitrogen dioxide objective was being exceeded by a substantial margin at the Swiss Cottage automatic monitor in 2012, concentrations are now below the objective. PM_{10} concentrations have also reduced.

Table 9: Comparison of Annual Mean Concentrations at Swiss Cottage (CD1) (2012 and 2023) (µg/m³)

Pollutant	2012	2023	Objective
Nitrogen Dioxide	**70**	33	40
PM_{10}	22.6	18	40

[a] Exceedances of the objectives are shown in bold.

6 Construction Phase Assessment

Construction Traffic

6.1 The construction works is expected to generate a maximum of 31 HDV trips as an AADT, which is above the screening threshold of 25 HDVs recommended for use within an AQMA in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) (see Appendix A1). However, as stated in the EPUK/IAQM guidance, where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria (100 HDVs) is likely to be more appropriate. The 2023 annual mean NO_2 concentration at automatic monitor CD1 is below 90% of the objective and thus it is judged that there is no requirement for a detailed assessment of construction traffic impacts at existing receptors.

6.2 The CD1 monitor is more representative than the diffusion tube monitoring survey results because the six-month survey data which is annualised in accordance with the TG22 guidance, introduces uncertainty due to the nature of annualisation. Continuous monitoring units are also more accurate than diffusion tubes. Thus, the CD1 monitor which is located in a similar location (along the same road) with high data capture rates is considered more representative for determining baseline air quality in the vicinity of the proposed development. In addition, monitoring survey results for AVE 01 to AVE 05 measured concentrations in line with the CD1 monitor, the exception is AVE 06, which measured higher concentrations most likely due to its proximity to the bus stop and thus is not representative of air quality conditions in the wider area.

6.3 It can be concluded that the proposed development will not have a significant impact on local roadside air quality as a result of construction vehicle trips.

On-Site Exhaust Emissions

6.4 The IAQM guidance (IAQM, 2024) states:

"Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur".

6.5 In line with the GLA's Control of Dust and Emissions During Construction and Demolition SPG, and as describe in Appendix A5, NRMM are expected to comply with emissions standards. Additionally, there will be no idling when vehicles are not in use, and machinery will be located away from sensitive receptors as far as possible. It is judged that there no risk of significant effects at existing receptors as a result of on-site machinery emissions.

Construction Dust and Particulate Matter Emissions

6.6 The construction dust assessment considers the potential for impacts within 250 m of the site boundary; or within 50 m of roads used by construction vehicles. The assessment methodology is that provided by the IAQM (2024)[4]. This is based around a sequence of steps. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2a determines

[4] Upon which the GLA's SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2023) has been based.

the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts. Appendix A5 explains the approach in more detail.

6.7 The construction works will give rise to a risk of dust impacts during earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see Appendix A5), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition

6.8 No demolition works are planned for this site as the demolition works have previously been completed as part of the Implemented Permission. Impacts of demolition will therefore not be considered further.

Earthworks

6.9 The characteristics of the soil at the development site have been defined using the British Geological Survey's UK Soil Observatory website (British Geological Survey, 2017), as set out in Table 10. Overall, it is considered that, when dry, this soil has the potential to be dusty.

Table 10: Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Argillaceous[a]
European Soil Bureau Description	Pre-quaternary Marine/Estuarine Sand and Silt
Soil Group	Medium to Light (Silty) to Heavy
Soil Texture	Clayey Loam[b] to Silty Loam

[a] grain size < 0.06 mm.

[b] a loam is composed mostly of sand and silt.

6.10 The site covers approximately 4,300 m^2 but only a limited portion of the site is subject to earthworks, involving adjustments to the basement built under the Implemented permission, excavation, haulage, tipping and landscaping. The majority of the site's earthworks were previously undertaken under the Implemented Permission with both basement and ground floor slab already constructed. It is understood the earthworks will be confined to the southern part of the site (near to Avenue Road and towards the entrance to the park. The earthworks will last around 4 weeks and dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials (such as dry soil) but earthworks required are understood to be limited. Based on the example definitions set out in Table A5-1 in Appendix A5, the dust emission class for earthworks is considered to be *small*.

Construction

6.11 Total construction building volume is anticipated to be the IAQM high risk category of over 75,000 m^3. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty

materials. There will be no piling and no onsite concrete batching. The construction is expected to take place over approximately 134 weeks. Based on the example definitions set out in Table A5-1 in Appendix A5, the dust emission class for construction is considered to be *large*.

Trackout

6.12 It is currently anticipated there will be a maximum number of approximately 40 outward heavy vehicle movements per day. Before these vehicles exit the site they may travel over a potentially dusty surface with some unpaved road within the site. Based on the example definitions set out in Table A5-1 in Appendix A5, the dust emission class for trackout is considered to be *medium*.

6.13 Table 11 summarises the dust emission magnitude for the proposed development.

Table 11: Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Earthworks	Small
Construction	Large
Trackout	Medium

Sensitivity of the Area

6.14 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM_{10} concentrations.

Sensitivity of the Area to Effects from Dust Soiling

6.15 The IAQM guidance, upon which the GLA's guidance is based, explains that residential and school properties are 'high' sensitivity receptors to dust soiling, while locations where people wouldn't 'reasonably be expected to be present continuously or regularly for extended periods' are considered 'medium' sensitivity, this includes locations such as places of work or parks (Table A5-2 in Appendix A5). There are estimated to be between 10-100 residential properties (high sensitivity) along with a number of workplaces, a university, a theatre, a library and open space (medium sensitivity) within 50m of the site boundary (see Figure 4). Furthermore, as noted in paragraph 6.10, the area of the site where earthworks will occur is limited to a smaller area in the south of the site. Using the matrix set out in Table A5-3 in Appendix A5, the area surrounding the onsite works is of 'medium' sensitivity to dust soiling.

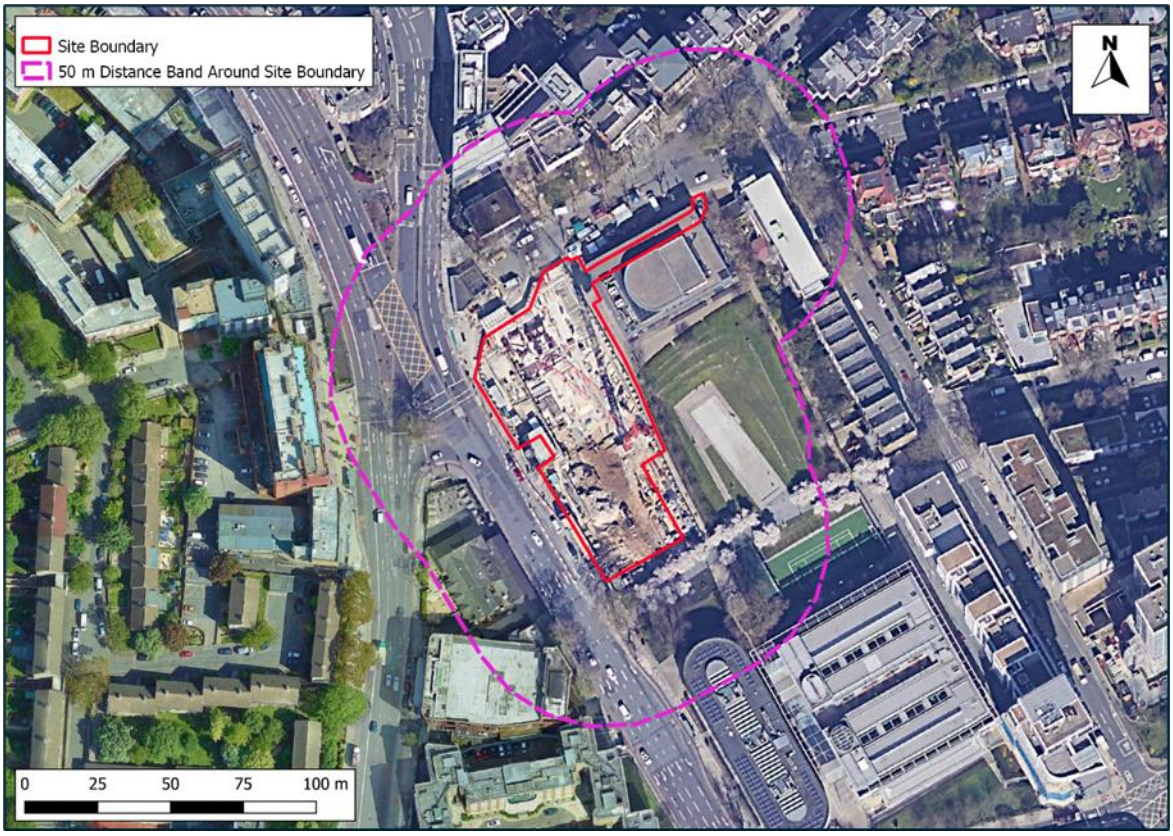


Figure 4: 50 m Distance Bands around Site Boundary

Imagery ©2025 Airbus, Maxar Technologies, Map data ©2025.

6.16 The IAQM guidance (IAQM, 2024) explains that there is a risk of material being tracked 250 m from the site exit. Vehicles will exit site turning left onto Avenue Road (A41), traveling south down the A41 before turning right onto Adelaid Road. There are estimated to be between 10-100 residential properties within 20m of the roads along which material could be tracked (Figure 5), and Table A5-3 in Appendix A5 thus indicates that the area is of 'high' sensitivity to dust soiling due to trackout.

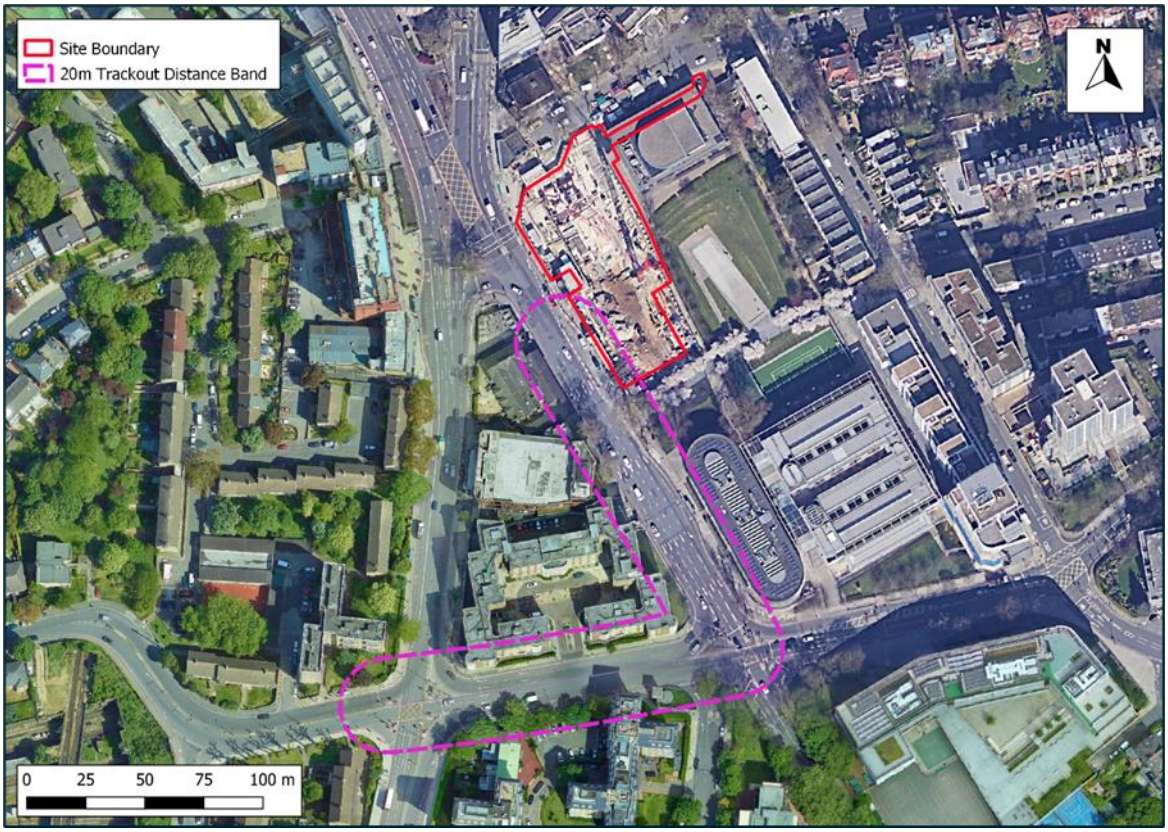


Figure 5: 20 m Distance Bands around Roads Used by Construction Traffic Within 250m of the Site Exit

Imagery ©2025 Airbus, Maxar Technologies, Map data ©2025.

Sensitivity of the Area to any Human Health Effects

6.17 Residential properties are also classified as being of 'high' sensitivity to human health effects, while places of work are classified as being of 'medium' sensitivity. The matrix in Table A5-4 in Appendix A5 requires information on the baseline annual mean PM_{10} concentration in the area. The nearest automatic monitor to the site is CD1 (Swiss Cottage) approximately 80 m north of the site, which measured an annual mean PM_{10} concentration of 18 µg/m^3 in 2023. Using the matrix in Table A5-4 in Appendix A5, the area surrounding the onsite works and the area surrounding roads along which material may be tracked from is of 'low' sensitivity to human health effects.

Sensitivity of the Area to any Ecological Effects

6.18 The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

Summary of the Area Sensitivity

6.19 Table 12 summarises the sensitivity of the area around the proposed construction works.

Table 12: Summary of the Area Sensitivity

Effects Associated With:	Sensitivity of the Surrounding Area	
	On-site Works	Trackout
Dust Soiling	Medium Sensitivity	High Sensitivity
Human Health	Low Sensitivity	Low Sensitivity

Risk and Significance

6.20 The dust emission magnitudes in Table 11 have been combined with the sensitivities of the area in Table 12 using the matrix in Table A5-6 in Appendix A5, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table 13. These risk categories have been used to determine the appropriate level of mitigation as set out in Appendix A6 (step 3 of the assessment procedure).

Table 13: Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health
Earthworks	Low Risk	Negligible
Construction	Medium Risk	Low Risk
Trackout	Medium Risk	Low Risk

6.21 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant' (IAQM, 2024). This is consistent with the findings of the air quality assessment for the Implemented Permission.

7 Operational Phase Assessment

Road Traffic Impacts

The development will be 'car-free', providing 8 blue-badge parking spaces for residents only. The project's Transport Consultants (Caneparo Associates) have predicted that the proposed development will generate 91 light vehicle daily trips and 10 heavy vehicle daily trips on the local road network (associated with the residential and retail uses); these daily trip rates are below the more stringent screening threshold of 100 LDVs and 25 HDVs recommended for use within an AQMA in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) (see Appendix A1). As such, it is judged that the relevant screening thresholds will not be exceeded and there is no requirement for a detailed assessment of road traffic impacts at existing receptors. The air quality assessment for the Implemented Permission assumed that the development would lead to a reduction in vehicle trips compared with the historic use of the site.

7.1 Therefore, it can be concluded that the proposed development will not have a significant impact on local roadside air quality.

Generator Impacts

7.2 The Implemented Permission included a CHP and boilers. In this s73 Amended Application, the energy strategy has been revised to increase the use of renewable sources, such as ASHP. Therefore, there will be no centralised combustion sources within the proposed development.

7.3 It is proposed that a 400 kW, back-up diesel generator will be installed on site for life-safety power provision; it is anticipated that this is required given the size and nature of the development to provide essential services such as emergency lighting and sprinkler systems. The generator will be operated routinely for a maximum of ten hours per year, during testing and maintenance activities and will be installed at ground level with the flue extending to 3 m above roof level.

7.4 As the generator will be tested for a maximum of ten hours per year, it will not operate frequently enough to cause an exceedance of the hourly mean NO_2 objective (which allows 18 hours above the objective before there is an exceedance) or the 24-hour objective for PM_{10} (which allows no more than 35 days). The testing is also likely to occur under a variety of meteorological conditions (and wind directions), meaning that it is unlikely that any periods of elevated concentrations would occur at the same location each time the generator is run. Given the low number of annual operating hours, the NOx emission rate is expected to be well below 5 mg/s when the emissions generated during testing are averaged over a year. Furthermore, as the flue for the generator is 3m above roof level, it is considered to have favourable dispersion conditions.

7.5 Therefore, in accordance with the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), the effect on local air quality from emissions associated with the proposed emergency generator testing is considered insignificant. In addition, emissions from the s73 Amended Application will be much lower than the Implemented Permission.

Impacts of Existing Sources on Future Residents of the Development

7.6 LBC measures NO_2 concentrations at multiple locations within 500 m of the Site. In 2022 and 2023, concentrations were below the objective and the Air Quality CPG criteria across all sites in the vicinity of the proposed development (Table 2). The site specific NO_2 monitoring undertaken also demonstrated that annual mean NO_2 concentrations at the site boundary were below the annual mean objective and met the Air Quality CPG; indicating that air quality is acceptable across the Site,

including the location of residential units and the community space. It should also be noted that the façade of the proposed development will be set further back from the road than the monitoring locations in the site-specific survey and there will be no residential exposure at ground floor (retail and commercial only). Therefore, the residential receptors are expected to experience lower concentrations than monitored in the survey.

7.7 Monitoring of PM_{10} and $PM_{2.5}$ concentrations at the Swiss Cottage automatic monitor also indicates that existing pollutant concentrations are well below the relevant objectives and met the Air Quality CPG criteria in 2023.

7.8 Based on the findings of the monitoring study, and since air quality conditions will improve over the coming years (due to measures to reduce pollutant emissions from road traffic by the introduction of more stringent emissions standards), it is reasonable to conclude that future residents and users of the proposed development will experience acceptable air quality conditions.

Achieving Compliance with the AMCT and PERT

7.9 Based on LBC monitoring, the annual mean $PM_{2.5}$ concentrations are below the AMCT target to be met by 2040 across the Site.

7.10 Defra have set out in their Interim Planning Guidance (Defra, 2024) two questions designed to consider whether a development supports the AMCT and PERT $PM_{2.5}$ targets.

7.11 The first question is "How has exposure to $PM_{2.5}$ been considered when selecting the development site?". Firstly, the exposure of $PM_{2.5}$ on building users has been taken account by locating the residential elements of the development above ground floor level. In addition, the development will not burn any fossil fuel on site and instead uses as much on-site renewable energy as possible, including ASHPs. Emissions during the construction phase will be managed through the use of appropriate mitigation measures as set out in the outline Construction Environmental Management Plan (oCEMP). Emissions during the operation phase are considered to be negligible.

7.12 The second question is "What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors?". For the present proposed development mitigation measures to reduce $PM_{2.5}$ exposure include having a 'car-free' development and an all-electric system for the energy strategy consisting of ASHPs.

7.13 It is considered that the development complies with the requirements to deliver achievement of the AMCT and PERT by 2040 as appropriate action has been taken to minimise emissions of $PM_{2.5}$ and its precursors as far as is reasonably practicable.

'Air Quality Neutral'

7.14 The purpose of the London Plan's requirement that development proposals be 'air quality neutral' is to prevent the gradual deterioration of air quality throughout Greater London. The 'air quality neutrality' of a proposed development, as assessed in this section, does not directly indicate the potential of the proposed development to have significant impacts on human health (this has been assessed separately in the previous section). The air quality neutral assessment has been undertaken using the latest GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023).

7.15 The GLA's London Plan Guidance (Air Quality Neutral) (GLA, 2023) sets out guidance on how an 'air quality neutral' assessment should be undertaken. It also provides a methodology for calculating an offsetting payment if a development is not 'air quality neutral' and it is not possible to identify or agree appropriate and adequate mitigation.

Building Emissions

7.16 The proposed development does not include any combustion plant for the routine provision of electricity, heating or hot water and will thus have no direct building emissions. It will include a life-safety diesel generator, however the GLA's Air Quality Neutral guidance states that "*backup plant installed for emergency and life safety power supply, such as diesel generators, may be excluded from the calculation of predicted building emissions*". The proposed development is, therefore, better than air quality neutral in terms of building emissions.

Road Transport Emissions

7.17 The proposed development will provide eight disabled persons car parking spaces, as such will meet the definition of 'car free'[5]. As per paragraph 4.1.2 of the Air Quality Neutral London Plan Guidance, where major developments meet the definition of car free, they can be assumed to be air quality neutral for road transport emissions.

Summary

7.18 As the proposed development is 'car-free' and does not have any direct building emissions (beyond the life-safety diesel generator), the proposed development therefore complies with the requirement that all new developments in London should be at least air quality neutral. This represents an improvement compared with the Implemented Permission, which included higher building emissions from CHP and boilers.

[5] Developments that are defined as 'car-free' may include provision for disabled persons parking. The standards for disabled persons parking are outlined in the London Plan parking policies (T6 and T6.1 to T6.5) and supporting text.

8 Mitigation

Good Design and Best Practice

8.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required.

8.2 The proposed development incorporates the following good design and best practice measures:

- adoption of a Construction Management Plan (CMP) to minimise the environmental impacts of the construction works;
- scheme design such that the most sensitive uses (residential) are the furthest from source of pollution (roads), for example the ground floor is retail and commercial, with residential occupation only on the first floor and higher;
- 'car-free' development with the provision of 8 blue badge holder parking spaces for residents only;
- provision of cycle access to the new development, including 340 long stay and 76 short stay cycle parking spaces;
- a resident and employee travel plan will be submitted alongside the Transport Assessment;
- use of air-source heating to avoid the need for on-site combustion, which represents an enhancement compared with the Implemented Permission which included CHP and boilers;
- use of ambient loop air-source heating which can efficiently provide heating and cooling by removing excess heat from one dwelling back into the loop for other dwellings to utilise; and
- the back-up diesel generator will operate for ten hours per year and will have a flue with a height 3 m above roof level to ensure the best possible dispersion environment.

Recommended Mitigation

Construction Impacts

8.3 Measures to mitigate dust emissions will be required during the construction phase of the development in order to minimise effects upon nearby sensitive receptors.

8.4 The site has been identified as a *Negligible* Risk during earthworks, *Low* Risk for construction and *Medium* Risk for trackout, as set out in Table 13. The GLA's SPG on *The Control of Dust and Emissions During Construction and Demolition* (GLA, 2014) describes measures that should be employed, as appropriate, to reduce the impacts, along with guidance on what monitoring should be undertaken during the construction phase. This reflects best practice experience and has been used, together with the professional experience of the consultant who has undertaken the dust impact assessment and the findings of the assessment, to draw up a set of measures that should be incorporated into the specification for the works. These measures are described in Appendix A6.

8.5 The mitigation measures have been written into the outline Construction Management Plan, and may require monitoring. The GLA's guidance suggests that, for a Medium Risk site, automatic monitoring of particulate matter (as PM_{10}) will be required, which has been considered within this assessment. It also states that, on certain sites, it may be appropriate to determine the existing (baseline) pollution

levels before work begins. However, the guidance is clear that the Local Authority should advise as to the appropriate air quality monitoring procedure and timescale on a case-by-case basis.

8.6 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local watercourses.

Operation Impacts

8.7 The assessment has demonstrated that the overall air quality effect of the proposed development will be 'not significant'; it will not introduce any new exposure into areas of unacceptable air quality, nor will the development-generated traffic or life-safety diesel generator emissions have a significant impact on local air quality. It is, therefore, not considered appropriate to propose further mitigation measures for this development.

9 Conclusions

9.1 The assessment has considered the impacts of the proposed development on local air quality in terms of dust and particulate matter emissions during construction and emissions from the life-safety generator and road traffic generated by the completed and occupied development. It has also identified the air quality conditions that future residents will experience.

Construction Impacts

9.2 The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise dust emissions. Appropriate measures have been recommended and, with these measures in place, it is expected that any residual effects will be 'not significant', which is consistent with the Implemented Permission

Operational Impacts

9.3 Based on LBC monitoring data and the project-specific monitoring survey, air quality conditions for future residents of the proposed development have been shown to be acceptable, with concentrations below the air quality objectives across the site. $PM_{2.5}$ concentrations are also expected to meet the respective Air Quality CPG criteria and be below the GLA target.

9.4 The proposed development will be 'car-free' and traffic generated by the proposed development will be below industry screening thresholds and therefore will have a negligible impact on air quality conditions at all existing receptors. Emissions from the testing of the emergency generator are also anticipated to be negligible due to the low number of hours of annual operation and because the flue will be 3m above roof level to facilitate dispersion.

9.5 The overall operational air quality effects of the proposed development are therefore judged to be 'not significant'. This is an improvement from the Implemented Permission, where additional mitigation was required (restrictions on locations of air intakes) to reduce the air quality effects to such a level that they would be 'not significant'. On-site monitoring has demonstrated that as a result of improvements in air quality, this mitigation is no longer necessary.

Air Quality Neutral

9.6 As the proposed development is 'car-free' and does not have any direct building emissions (beyond the life-safety diesel generator), the proposed development therefore complies with the requirement that all new developments in London should be at least air quality neutral. This is an enhancement compared to the Implemented Permission.

Policy Implications

9.7 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 198 of the NPPF, being appropriate for its location both in terms of its effects on the local air quality environment and the air quality conditions for future residents. It is also consistent with Paragraph 199, as it will not affect compliance with relevant limit values or national objectives.

9.8 The proposed development is also consistent with Policy CC4 LBC's Local Plan, as the development does not increase exposure to poor air quality, and with policy T2 as it will be car free.

9.9 The proposed development is compliant with Policy SI 1 of the London Plan in the following ways:

- it will not lead to further deterioration of existing poor air quality;
- it will not cause exceedances of legal air quality limits;
- it will not create unacceptable risk of high levels exposure to poor air quality;
- design solutions have been used to address air quality issues rather than post-design mitigation, including design measures to minimise exposure; and
- it is better than air quality neutral.

10 References

British Geological Survey (2017) *UK Soil Observatory Map Viewer*, [Online], Available: http://mapapps2.bgs.ac.uk/ukso/home.html.

Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, Defra.

Defra (2017) *Air quality plan for nitrogen dioxide (NO2) in the UK*, Available: https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017.

Defra (2018a) *A Green Future: Our 25 Year Plan to Improve the Environment*, [Online], Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf.

Defra (2018b) *Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations*, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746100/air-quality-no2-plan-supplement.pdf.

Defra (2019) *Clean Air Strategy 2019*, Available: https://www.gov.uk/government/publications/clean-air-strategy-2019.

Defra (2020) *2020 NO2 projections data (2018 reference year)*, Available: https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data.

Defra (2022) *Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version*, [Online], Available: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf.

Defra (2023a) *Local Air Quality Management (LAQM) Support Website*, Available: http://laqm.defra.gov.uk/.

Defra (2023b) *Air Quality Strategy: Framework for Local Authority Delivery*, [Online], Available: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery.

Defra (2023c) *Environmental Improvement Plan 2023*, [Online], Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133967/environmental-improvement-plan-2023.pdf.

Defra (2024) *PM2.5 Targets: Interim Planning Guidance*, [Online], Available: https://uk-air.defra.gov.uk/pm25targets/planning.

Defra (2025a) *UK Pollutant Release and Transfer Register*, Available: http://prtr.defra.gov.uk/map-search.

Defra (2025b) *Local Air Quality Management (LAQM) Support Website*, [Online], Available: http://laqm.defra.gov.uk/.

Defra (2025c) *UK Ambient Air Quality Interactive Map*, [Online], Available: https://uk-air.defra.gov.uk/data/gis-mapping.

Department for Levelling Up, Housing and Communities (DLUHC) (2024) *National Planning Policy Framework*, [Online], Available: https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf.

Environment Act 2021 (2021).

GLA (2014) *The Control of Dust and Emissions from Construction and Demolition SPG*, Available: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/supplementary-planning-guidance/control-dust-and.

GLA (2018a) *London Environment Strategy*, Available: https://www.london.gov.uk/what-we-do/environment/london-environment-strategy.

GLA (2018b) *Mayor's Transport Strategy*.

GLA (2019) 'London Local Air Quality Management Technical Guidance 2019', no. https://www.london.gov.uk/sites/default/files/llaqm_technical_guidance_2019.pdf.

GLA (2021) *The London Plan: The Spatial Development Strategy for London*, Available: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf.

GLA (2023) *London Plan Guidance - Air Quality Neutral.*, Available: https://www.london.gov.uk/programmes-strategies/planning/implementing-london-plan/london-plan-guidance/air-quality-neutral-aqn-guidance.

IAQM (2024) *Guidance on the Assessment of Dust from Demolition and Construction v2.2*.

LBC (2024) *London Borough of Camden Air Quality Annual Status for 2023*.

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

London Borough of Camden (2021a) *Transport Camden Planning Guidance*.

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

London Borough of Camden (2022) *Camden Clean Air Strategy 2019-2034 Camden Clean Air Action Plan 2023-2026*.

London Borough of Camden (2023a) *AIr Quality Assessment in Planning Applications, [Online], Available: https://www.camden.gov.uk/air-quality-assessment*.

London Borough of Camden (2024) 'Draft New Camden Local Plan - Regulation 18 Consultation Version'.

Ministry of Housing, Communities & Local Government (2019) *Planning Practice Guidance*, Available: https://www.gov.uk/government/collections/planning-practice-guidance.

Moorcroft and Barrowcliffe et al (2017) *Land-Use Planning & Development Control: Planning For Air Quality v1.2*, IAQM, London, Available: http://iaqm.co.uk/guidance/.

The European Parliament and the Council of the European Union (1997) *Directive 97/68/EC of the European Parliament and of the Council*, Available: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31997L0068.

11 Glossary

AADT	Annual Average Daily Traffic
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
BEB	Building Emissions Benchmark
CAZ	Clean Air Zone
CEMP	Construction Environmental Management Plan
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMP	Dust Management Plan
EFT	Emission Factor Toolkit
EPUK	Environmental Protection UK
EU	European Union
EV	Electric Vehicle
Exceedance	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
Focus Area	Location that not only exceeds the annual mean limit value for NO_2 but also has a high level of human exposure
GIA	Gross Internal Floor Area
GLA	Greater London Authority
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
IAQM	Institute of Air Quality Management
kW	Kilowatt
LAQM	Local Air Quality Management
LB	London Borough
LDV	Light Duty Vehicles (<3.5 tonnes)
LEZ	Low Emission Zone
µg/m^3	Microgrammes per cubic metre
NO_2	NO2

NOx	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
NRMM	Non-road Mobile Machinery
OEP	Office for Environmental Protection
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
$PM_{2.5}$	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
PPG	Planning Practice Guidance
SPG	Supplementary Planning Guidance
SPD	Supplementary Planning Document
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TEA	Triethanolamine – used to absorb NO2
TEB	Transport Emissions Benchmark
TfL	Transport for London
ULEZ	Ultra Low Emission Zone
WHO	World Health Organisation
ZEC	Zero Emission Capable

12 Appendices

A1 EPUK & IAQM Planning for Air Quality Guidance

A1.1 The guidance issued by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017)is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

Air Quality as a Material Consideration

"Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- the severity of the impacts on air quality;
- the air quality in the area surrounding the proposed development;
- the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and
- the positive benefits provided through other material considerations".

Recommended Best Practice

A1.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

"The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions".

A1.3 The guidance sets out a number of good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m^2 of commercial floorspace;
- are carried out on land of 1 ha or more.

A1.4 The good practice principles are that:

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new "street canyon", as this inhibits pollution dispersion;
- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;

- The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1000 m^2 of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- All gas-fired boilers to meet a minimum standard of <40 mgNOx/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:

    iii) Spark ignition engine: 250 mgNOx/Nm^3;

    iv) Compression ignition engine: 400 mgNOx/Nm^3;

    v) Gas turbine: 50 mgNOx/Nm^3.

A1.5 A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNOx/Nm^3 and 25 mgPM/Nm^3.

A1.6 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

"It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the "damage cost approach" used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential".

A1.7 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

Screening

Impacts of the Local Area on the Development

"There may be a requirement to carry out an air quality assessment for the impacts of the local area's emissions on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should take into account:

- the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;
- the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;
- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO2), that would cause unacceptably high exposure for users of the new development; and
- the presence of a source of odour and/or dust that may affect amenity for future occupants of the development".

Impacts of the Development on the Local Area

A1.8 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha.

A1.9 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A1.10 If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of 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;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;

- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and
- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A1.11 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A1.12 On combustion processes (including standby emergency generators and shipping) where there is a risk of impacts at relevant receptors, the guidance states that:

"Typically, any combustion plant where the single or combined NOx 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. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NOx gas boiler or a 30kW CHP unit operating at <95mg/Nm^3.

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 NO2 concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable".

A1.13 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

"The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive 'trigger' for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality".

A1.14 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

"The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer".

A1.15 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

Assessment of Significance

A1.16 There is no official guidance in the UK in relation to development control on how to describe the nature of air quality impacts, nor how to assess their significance. The approach within the EPUK/IAQM guidance has, therefore, been used in this assessment. This approach involves a two stage process:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts.

A1.17 The guidance recommends that the assessment of significance should be based on professional judgement, with the overall air quality impact of the development described as either 'significant' or 'not significant'. In drawing this conclusion, the following factors should be taken into account:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts;
- the potential for cumulative impacts and, in such circumstances, several impacts that are described as '*slight*' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a '*moderate*' or '*substantial*' impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health; and
- the judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.

A1.18 The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the residents of any new development where the air quality is such that an air quality objective is not met will be judged as significant. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.

A1.19 A judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix A7.

A2 Policy, Legislation and Guidance

Air Quality Strategy 2007

A2.1 The Air Quality Strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives.

Air Quality Strategy 2023

A2.2 The Air Quality Strategy: Framework for Local Authority Delivery 2023 (Defra, 2023b) sets out the strategic air quality framework for local authorities and other Air Quality Partners in England. It sets out their powers and responsibilities, and actions the government expects them to take. It does not replace other air quality guidance documents relevant to local authorities.

Clean Air Strategy 2019

A2.3 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government, in partnership with the Governments of Scotland, Wales and Northern Ireland, will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

Environment Act 2021

A2.4 The UK's new legal framework for protection of the natural environment, the Environment Act (2021) passed into UK law in November 2021. The Act gives the Government the power to set long-term, legally binding environmental targets. It also establishes an Office for Environmental Protection (OEP), responsible for holding the government to account and ensuring compliance with these targets.

A2.5 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96) sets two new targets for future concentrations of $PM_{2.5}$. These targets are described in Paragraph 3.3.

Environmental Improvement Plan 2023

A2.6 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018a). The Environment Act (2021) requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2023 (Defra, 2023c) is the first revision. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, including that of achieving clean air.

A2.7 The Environmental Improvement Plan 2023 sets out the new air quality targets which have been set for concentrations of $PM_{2.5}$. These targets, which are described in more detail in Paragraph 3.4, include the long-term targets in the Statutory Instrument described in Paragraph A2.5, and interim targets to be achieved by 2028.

A2.8 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also outlines the respective roles of industry, agricultural sectors, and the Department for Transport in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

Planning Policy

National Policies

A2.9 The National Planning Policy Framework (NPPF) (2024) sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development, and that the planning system has three overarching objectives, one of which (Paragraph 8c) is an environmental objective:

"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy".

A2.10 To prevent unacceptable risks from air pollution, Paragraph 187 of the NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by…preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans".

A2.11 Paragraph 198 states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".

A2.12 More specifically on air quality, Paragraph 199 makes clear 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.".

A2.13 The NPPF is supported by Planning Practice Guidance (PPG) (Ministry of Housing, Communities & Local Government, 2019), which includes guiding principles on how planning can take account of the impacts of new development on air quality.

A2.14 The PPG sets out the information that may be required in an air quality assessment, making clear that:

"Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific".

London-Specific Policies

The London Plan

A2.15 The London Plan (GLA, 2021) sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The key policy relating to air quality is Policy SI 1 on Improving air quality, Part B1 of which sets out three key requirements for developments:

"Development proposals should not:

lead to further deterioration of existing poor air quality

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

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

A2.16 The Policy then details how developments should meet these requirements, stating:

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

development proposals must be at least Air Quality Neutral

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

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

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".

A2.17 Part C of the Policy introduces the concept of Air Quality Positive for large-scale development, stating:

"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:

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

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

The proposed development is not large-scale development, thus an Air Quality Positive statement is not required.

A2.18 Regarding construction and demolition impacts, Part D of Policy SI 1 of the London Plan states:

"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".

A2.19 Part E of Policy SI 1 states the following regarding mitigation and offsetting of emissions:

"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

A2.20 The London Environment Strategy was published in May 2018 (GLA, 2018a). The strategy considers air quality in Chapter 4; the Mayor's main objective is to create a "*zero emission London by 2050*". Policy 4.2.1 aims to "*reduce emissions from London's road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport*". The strategy sets a target to achieve, by 2030, the guideline value for $PM_{2.5}$ which was set by the World Health Organisation (WHO) in 2005. An implementation plan for the strategy has also been published which sets out what the Mayor will do between 2018 and 2023 to help achieve the ambitions in the strategy.

Mayor's Transport Strategy

A2.21 The Mayor's Transport Strategy (GLA, 2018b) sets out the Mayor's policies and proposals to reshape transport in London over the next two decades. The Strategy focuses on reducing car dependency and increasing active sustainable travel, with the aim of improving air quality and creating healthier streets. It notes that development proposals should "*be designed so that walking and cycling are the most appealing choices for getting around locally*".

GLA SPG: The Control of Dust and Emissions During Construction and Demolition

A2.22 The GLA's SPG on The Control of Dust and Emissions During Construction and Demolition (GLA, 2014) outlines a risk assessment based approach to considering the potential for dust generation from a construction site, and sets out what mitigation measures should be implemented to minimise the risk of construction dust impacts, dependent on the outcomes of the risk assessment. This guidance is largely based on the Institute of Air Quality Management's (IAQM's) guidance (IAQM, 2024), and it states that "*the latest version of the IAQM Guidance should be used*".

GLA LPG: Air Quality Neutral

A2.23 The GLA's Air Quality Neutral LPG outlines the assessment approach for determining whether a development is Air Quality Neutral (GLA, 2023). The guidance sets out benchmarks for the maximum allowable emissions of NOx and particulate matter based on the size and use class of the proposed development. To determine whether the development is Air Quality Neutral, the building and transport emissions from the proposed development are compared to these benchmarks.

Air Quality Focus Areas

A2.24 The GLA has identified 160 air quality Focus Areas in London. These are locations that not only exceed the annual mean limit value for NO2, but also have high levels of human exposure. They do not represent an exhaustive list of London's air quality hotspot locations, but locations where the GLA believes the problem to be most acute. They are also areas where the GLA considers there to be the most potential for air quality improvements and are, therefore, where the GLA and Transport for London (TfL) will focus actions to improve air quality. The majority of the site is also located within the '*Swiss Cottage from South Hampstead to Finchley Road Station*' air quality Focus Area.

Local Transport Plan

A2.25 The Camden Planning Guidance (CPG) on Transport (London Borough of Camden, 2021a) sets out guidance on Delivery and Servicing Plans (DSPs) in relation to Policies A1, A4, CC4, and T4 of the LBC Local Plan, for development proposals which are likely to have an impact on the local noise and vibration, air quality, congestion and road safety. This guidance describes the aim of a DSP as being "*to minimise motorised freight movements, mitigating against the negative impacts of freight movements in general, in particular those of motorised freight traffic.*"

A2.26 The CPG on Transport also references requirements for all new residential developments to be car free, and requirements on developers to ensure that there is adequate bike storage provision on site, and in some cases to make financial contributions towards cycle hire schemes if required by the Council.

Local Policies

A2.27 The LBC Local Plan (London Borough of Camden, 2017) was adopted in 2017. The Plan sets out the Council's planning policies, covering the period from 2016-2031. Policy CC4 on Air Quality states that:

"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 Consideration both the exposure of occupants to air pollution and the effect of the development on air quality. 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."

A2.28 In support of Policy CC4, the Local Plan also includes Policy T2 which requires that *"all new developments in the borough to be car free."*

A2.29 Policy A1 on Managing the Impact of Development states that: *"The Council will seek to protect the quality of life of occupiers and neighbours"* and will *"seek to ensure that the amenity of communities, occupiers and neighbours is protected…and require mitigation measures where necessary. Factors that we will consider include… impacts of the construction phase, including the use of Construction Management Plans…odour, fumes and dust."*

A2.30 Policy D1 on Design has implications to air quality as well:

"The Council will seek to secure high quality design in development. The Council will require that development […]

c. is sustainable in design and construction, incorporating best practice in resource management and climate change mitigation and adaptation;[…]

h. promotes health;

The Council will resist development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions…"

A2.31 The plan elaborates that *"architecture and urban design can affect human health through the quality and design of buildings and spaces, access to open space and nature, air quality, noise, opportunity for active transport such as walking and cycling, crime reduction and social cohesion."*

A2.32 LBC has also recently commenced consultation on a new Draft Local Plan (Regulation 18) (London Borough of Camden, 2024). Policy A3 (Air Quality) outlines a number of requirements for new

developments including for all developments to be at least air quality neutral, to use design solutions to reduce exposure to existing poor air quality and to consider emergency backup power for development sites early in the design process.

A2.33 To support the current Camden Local Plan, the Council has published a Camden Planning Guidance (CPG) document (London Borough of Camden, 2021b), specifically pertaining to air quality, which forms a Supplementary Planning Document (SPD). The CPG states that:

- *"All developments are to protect future occupants from exposure to poor air quality; and*
- *All developments are to limit their impact on local air quality and be at least air quality neutral."*

A2.34 The CPG describes air quality in the borough and measures to minimise emissions. The CPG references the 2005 WHO guidelines for NO_2, PM_{10}, and $PM_{2.5}$ of 40 µg/m^3, 20 µg/m^3 and 10 µg/m^3 respectively which Camden aims to achieve by 2030. The CPG also states that *"for the determination of planning applications and appraisal of Construction Management Plans, consideration must be paid to uncertainty in NO_2 data, therefore 38 µg/m^3 (the 40 µg/m3 WHO limit less 5%) shall be taken as the limit for this pollutant."*

A2.35 The CPG outlines when an air quality assessment should be undertaken and what the assessment should cover. With respect to dispersion modelling, the CPG states that *"modelling should not predict improvements to future years (future vehicle emissions or future background concentrations)."*

Air Quality Action Plans

National Air Quality Plan

A2.36 Defra has produced an Air Quality Plan to tackle roadside NO2 concentrations in the UK (Defra, 2017); a supplement to the 2017 Plan (Defra, 2018b) was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

Local Air Quality Action Plan

A2.37 LBC's combined Clean Air Strategy and Air Quality Action Plan (CAAP) (London Borough of Camden, 2022) sets out the strategic objectives for improving air quality in the borough between 2019 and 2034 and the actions that will be undertaken between 2023 and 2026 to support the strategic objectives.

A2.38 One of the Clean Air Strategy's key commitments is *"achieving the most stringent evidence-based air quality targets available, in as short a timeframe as possible. Currently these are the World Health Organization's (WHO) air quality guidelines, published in 2021"* of 10 µg/m^3 for NO_2 by 2034, 15 µg/m^3 for PM_{10} by 2030 and 5 µg/m^3 for $PM_{2.5}$ by 2034. These are more stringent than those published in the Air Quality CPG (see paragraph A2.34), which are based on the 2005 WHO guidelines and which are recommended for use *"for the determination of planning applications and appraisal of Construction Management Plans"* (London Borough of Camden, 2021a).

A2.39 The CAAP contains 36 'Clean Air Outcomes' to help improve air quality and protect health in Camden. The Plan sets out seven themes, around which a number of actions have been developed in order to improve local air quality:

- reducing construction emissions;

- reducing building emissions;
- reducing transport emissions;
- supporting communities and schools;
- indirect emissions and lobbying;
- public health and awareness; and,
- indoor air quality and occupational exposure.

A3 Adjustment of Short-Term Data to Annual Mean

A3.1 This report describes the results of the project-specific NO_2 monitoring that was carried out for a period of less than a full calendar year. In accordance with the procedure in Box 7.9 of Defra's LAQM.TG(22) guidance, the data have been adjusted to represent an equivalent annual mean concentration (Defra, 2022). This calculation is based on the ratio of concentrations over the monitoring period (23rd May 2024 to 27th November 2024), and the annual mean concentration between the 1st January 2024 and 31st December 2024 at three urban background sites operated as part of the Automatic Urban and Rural Network (AURN), where long-term data are available. This provides an annualisation factor, which is then applied to the time-weighted mean[6] measured at each diffusion tube.

A3.2 The annual mean NO_2 concentrations and the period means for each of the monitoring sites from which adjustment factors have been calculated are presented in Table A3-1, Table A3-2 and Table A3-3.

Table A3-1: Data used to Adjust Monitoring Data (AVE01, AVE03, AVE04, AVE05)

AURN Urban Background Site	Annual Mean Concentration (µg/m³)	Period Mean Concentration (µg/m³)	Annual Mean Data Capture (%)	Adjustment Factor
London N. Kennsington	15.4	13.9	98.6	1.10
London Bloomsbury	22.3	21.3	93.6	1.05
London Haringey Priory Park South	14.4	12.5	96.0	1.15
Average Factor [a]				**1.10**

[a] The bias adjusted period-mean measured concentrations are multiplied by the average annualisation factor to give total annual mean concentrations.

Table A3-2: Data used to Adjust Monitoring Data (AVE02)

AURN Urban Background Site	Annual Mean Concentration (µg/m³)	Period Mean Concentration (µg/m³)	Annual Mean Data Capture (%)	Adjustment Factor
London N. Kennsington	15.4	15.0	98.6	1.02
London Bloomsbury	22.3	22.9	93.6	0.97
London Haringey Priory Park South	14.4	13.5	96.0	1.07
Average Factor [a]				**1.02**

[a] The bias adjusted period-mean measured concentrations are multiplied by the average annualisation factor to give total annual mean concentrations.

[b] The period mean covers months 2, 4 and 6 (no data was available at AVE02 for months 1, 3 and 5)

[6] The mean based on diffusion tube exposure periods.

Table A3-3: Data used to Adjust Monitoring Data (AVE06)

AURN Urban Background Site	Annual Mean Concentration (µg/m^3)	Period Mean Concentration (µg/m^3)	Annual Mean Data Capture (%)	Adjustment Factor
London N. Kennsington	15.4	12.8	98.6	1.20
London Bloomsbury	22.3	19.6	93.6	1.14
London Haringey Priory Park South	14.4	11.1	96.0	1.30
Average Factor [a]				**1.21**

[a] The bias adjusted period-mean measured concentrations are multiplied by the average annualisation factor to give total annual mean concentrations.

[b] Period mean covers months 1,3,4,5 (no data was available at AVE06 for month 2 and 6)

A4 Bias Adjustment Factor

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1									
2	24/06/2024	25/07/2024	38.0	36.9	35.3	37	1.4	4	3.4
3	25/07/2024	20/08/2024	35.1	33.3	33.6	34	0.9	3	2.3
4	20/08/2024	26/09/2024	35.1	38.4	39.3	38	2.3	6	5.6
5	26/09/2024	24/10/2024	39.3	41.2	45.4	42	3.2	8	7.8
6									
7									
8									
9									
10									
11									
12									
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
22.9	99.3		Good
24.5	97.7	Good	Good
25.0	99.4	Good	Good
28.8	99.1	Good	Good
34.8	99.6	Good	Good
Overall survey -->		Good precision	Good Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision 4 out of 4 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%

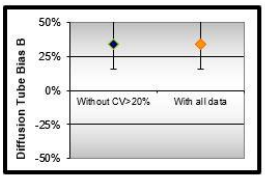
Bias calculated using 4 periods of data
Bias factor A 0.75 (0.66 - 0.88)
Bias B 33% (14% - 52%)

Diffusion Tubes Mean: 38 μgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 28 μgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 28 (25 - 33) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA

Bias calculated using 4 periods of data
Bias factor A 0.75 (0.66 - 0.88)
Bias B 33% (14% - 52%)

Diffusion Tubes Mean: 38 μgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 28 μgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 28 (25 - 33) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

A5 Construction Dust Assessment Procedure

A5.1 The criteria developed by IAQM (2024), upon which the GLA's guidance is based, divide the activities on construction sites into four types to reflect their different potential impacts. These are:

- demolition;
- earthworks;
- construction; and
- trackout.

A5.2 The assessment procedure includes the four steps summarised below:

STEP 1: Screen the Need for a Detailed Assessment

A5.3 An assessment is required where there is a human receptor within 250 m of the boundary of the site and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s), or where there is an ecological receptor within 50 m of the boundary of the site and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

A5.4 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is *negligible* and that any effects will be 'not significant'. No mitigation measures beyond those required by legislation will be required.

STEP 2: Assess the Risk of Dust Impacts

A5.5 A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emission magnitude (Step 2A); and
- the sensitivity of the area to dust effects (Step 2B).

A5.6 These two factors are combined in Step 2C, which is to determine the risk of dust impacts with no mitigation applied. The risk categories assigned to the site may be different for each of the four potential sources of dust (demolition, earthworks, construction and trackout).

Step 2A – Define the Potential Dust Emission Magnitude

A5.7 Dust emission magnitude is defined as either 'Small', 'Medium', or 'Large'. The IAQM guidance explains that this classification should be based on professional judgement, but provides the examples in Table A5-1.

Table A5-1: Examples of How the Dust Emission Magnitude Class May be Defined

Class	Examples
Demolition	
Large	Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >12 m above ground level

Class	Examples
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months
Earthworks	
Large	Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
Medium	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height.
Small	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.
Construction	
Large	Total building volume >75,000 m^3, on site concrete batching; sandblasting
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber)
Trackout [a]	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m
Medium	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m
Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m

[a] These numbers are for vehicles that leave the site after moving over unpaved ground.

Step 2B – Define the Sensitivity of the Area

A5.8 The sensitivity of the area is defined taking account of a number of factors:

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

A5.9 The first requirement is to determine the specific sensitivities of local receptors. The IAQM guidance recommends that this should be based on professional judgment, taking account of the principles in Table A5-2 . These receptor sensitivities are then used in the matrices set out in Table A5-3, Table A5-4

and Table A5-5 to determine the sensitivity of the area. Finally, the sensitivity of the area is considered in relation to any other site-specific factors, such as the presence of natural shelters etc., and any required adjustments to the defined sensitivities are made.

Step 2C – Define the Risk of Impacts

A5.10 The dust emission magnitude determined at Step 2A is combined with the sensitivity of the area determined at Step 2B to determine the *risk* of impacts with no mitigation applied. The IAQM guidance provides the matrix in Table A5-6 as a method of assigning the level of risk for each activity.

STEP 3: Determine Site-specific Mitigation Requirements

A5.11 The IAQM guidance provides a suite of recommended and desirable mitigation measures which are organised according to whether the outcome of Step 2 indicates a low, medium, or high risk. The list provided in the IAQM guidance has been used as the basis for the requirements set out in Appendix A6.

STEP 4: Determine Significant Effects

A5.12 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'.

A5.13 The IAQM guidance recognises that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. The local community may therefore experience occasional, short-term dust annoyance. The scale of this would not normally be considered sufficient to change the conclusion that the effects will be 'not significant'.

Table A5-2: Principles to be Used When Defining Receptor Sensitivities

Class	Principles	Examples
Sensitivities of People to Dust Soiling Effects		
High	users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land	dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms
Medium	users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or 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	parks and places of work
Low	the enjoyment of amenity would not reasonably be expected; or there is property that would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or 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	playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads
Sensitivities of People to the Health Effects of PM_{10}		
High	locations where members of the public may be exposed for eight hours or more in a day	residential properties, hospitals, schools and residential care homes
Medium	locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	may include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}
Low	locations where human exposure is transient	public footpaths, playing fields, parks and shopping streets
Sensitivities of Receptors to Ecological Effects		
High	locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species	Special Areas of Conservation with dust sensitive features

Class	Principles	Examples
Medium	locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition	Sites of Special Scientific Interest with dust sensitive features
Low	locations with a local designation where the features may be affected by dust deposition	Local Nature Reserves with dust sensitive features

Table A5-3: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

Table A5-4: Sensitivity of the Area to Human Health Effects [7]

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low

[7] For demolition, earthworks and construction, distances are taken either from the dust source or from the boundary of the site. For trackout, distances are measured from the sides of roads used by construction traffic. Without mitigation, trackout may occur from roads up to 250 m, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

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

Table A5-5: Sensitivity of the Area to Ecological Effects [7]

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

Table A5-6: Defining the Risk of Dust Impacts

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

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

A6 Construction Mitigation

A6.1 Table A6-1 presents a set of best-practice measures from the GLA guidance (GLA, 2014) that should be incorporated into the specification for the works. These measures should be written into a Dust Management Plan. Some of the measures may only be necessary during specific phases of work, or during activities with a high potential to produce dust, and the list should be refined and expanded upon in liaison with the construction contractor when producing the Dust Management Plan.

Table A6-1: Best-Practice Mitigation Measures Recommended for the Works

Measure	Desirable	Highly Recommended
Site Management		
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site		✓
Develop a Dust Management Plan (DMP)		✓
Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary		✓
Display the head or regional office contact information		✓
Record and respond to all dust and air quality pollutant emissions complaints		✓
Make a 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 those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions are being carried out and during prolonged dry or windy conditions		✓
Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and ensure that the action taken to resolve the situation is recorded in the log book		✓
Preparing and Maintaining the Site		
Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible		✓

Measure	Desirable	Highly Recommended
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site		✓
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period		✓
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution	✓	
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		✓
Carry out regular dust soiling checks of buildings within 100 m of site boundary and provide cleaning if necessary	✓	
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly		✓
Agree monitoring locations with the Local Authority		✓
Where possible, commence baseline monitoring at least three months before work begins		✓
Operating Vehicle/Machinery and Sustainable Travel		
Ensure all on-road vehicles comply with the requirements of the London LEZ (and ULEZ)		✓
Ensure all Non-road Mobile Machinery (NRMM) comply with London's NRMM emission standards. NRMM used on any site within Greater London is required to meet Stage IV of EU Directive 97/68/EC (The European Parliament and the Council of the European Union, 1997) and its subsequent amendments as a minimum. From January 2030 the stage V standard will apply, and from January 2040 only zero emission machinery will be allowed.		✓
Ensure all vehicles switch off engines when stationary – no idling vehicles		✓

Measure	Desirable	Highly Recommended
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable		✓
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on 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)	✓	
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials		✓
Implement a Travel Plan that supports and encourages sustainable staff travel (public transport, cycling, walking, and car-sharing)		✓
Operations		
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems		✓
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate		✓
Use enclosed chutes, conveyors and covered skips		✓
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate		✓
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods		✓
Waste Management		
Reuse and recycle waste to reduce dust from waste materials		✓
Avoid bonfires and burning of waste materials		✓
Measures Specific to Construction		

Measure	Desirable	Highly Recommended
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		✓
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 powder materials ensure bags are sealed after use and stored appropriately to prevent dust	✓	
Measures Specific to 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		✓
Access gates should be located at least 10 m from receptors, where possible		✓
Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site	✓	

A7 Professional Experience

Penny Wilson, BSc (Hons) CSci MIEnvSc MIAQM

Ms Wilson is a Technical Director with AQC, with more than 20 years' relevant experience in the field of air quality. She has been responsible for numerous assessments for a range of infrastructure developments including power stations, road schemes, ports, airports and residential/commercial developments. The assessments have covered operational and construction impacts, including dust and odour nuisance. She also provides services to local authorities in support of their LAQM duties, including the preparation of Review and Assessment and Action Plan reports, as well as audits of Air Quality Assessments submitted with planning and DCO applications. She has provided expert evidence to a number of Public Inquiries and civil court, and is a Member of the Institute of Air Quality Management and a Chartered Scientist.

Julia Burnell, MEnvSci (Hons) MIEnvSc MIAQM

Miss Burnell is a Principal Consultant with AQC with over eight years' experience in the field of air quality. She has experience of undertaking a range of air quality assessments for power, transportation, and mixed-use development projects both in the UK and internationally. She is also experienced at preparing environmental permit applications for medium combustion plant/specified generator sites and has commissioned and maintained numerous ambient air quality monitoring surveys. Prior to her work with AQC, Julia completed an MEnvSci (Hons) in Environmental Science (four-year integrated master's). She is a Member of both the Institute of Air Quality Management and the Institution of Environmental Sciences.

Lina Locatelli, BSc (Hons) MSc

Miss Locatelli is an Assistant Consultant with AQC and joined the company in 2023. Lina's background is in ecological and environmental sciences. During her BSc degree at the University of Edinburgh, she developed an interest around air & environmental pollution and its effects on human health. She completed her master's degree in Earth Future Research at the University of Glasgow, where she expanded her knowledge and passion around climate justice. After graduating, she was involved in delivering a UK-GOV funded net-zero project, where she gained understanding and practical knowledge in carbon accounting and setting science-based emission reduction targets.

London • Bristol • Warrington • Brussels