



Air Quality Assessment: 120 Archway Road, Haringey

May 2024



Experts in air quality
management & assessment

Document Control

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1 Introduction

- 1.1 This report describes the potential air quality impacts associated with the proposed residential re-development of 120 Archway Road in London Borough of Haringey (LBH). The site is currently occupied by a three-storey building. The proposals are to redevelop the site to provide five residential units within a five-storey block.
- 1.2 The proposed development lies within a borough-wide Air Quality Management Area (AQMA) declared by LBH for exceedances of the annual mean nitrogen dioxide (NO₂) and 24-hour mean PM₁₀ objectives. The location of the proposed development is shown in Figure 1.
- 1.3 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 are not exposed to exceedances of the air quality objectives.

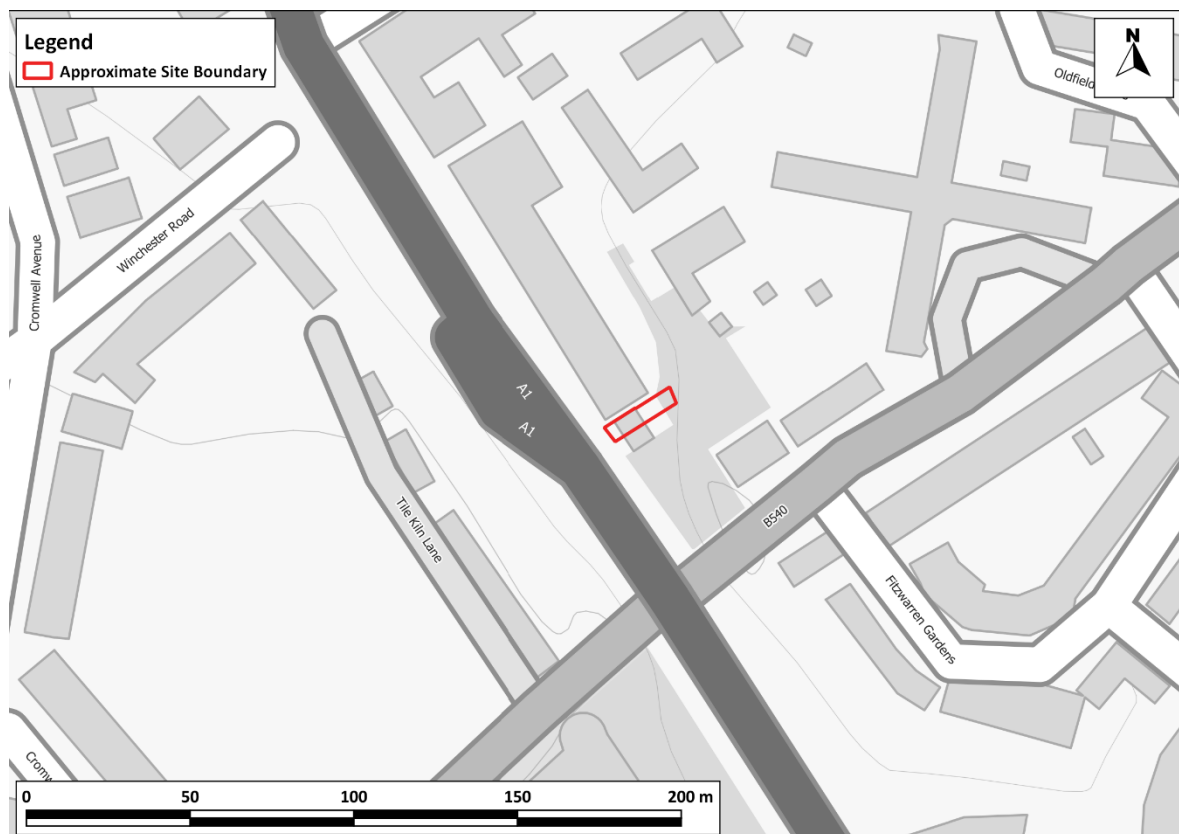


Figure 1: Location of the Proposed Development

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- 1.4 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)¹ recommend a two-stage screening approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions, from road traffic generation and the development itself, have the potential for significant air quality effects. The approach, as described 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 m² of other land uses and will provide ten or fewer parking spaces, and no centralised energy facility or other centralised combustion process on site, then there is no need to progress to a detailed assessment.
- 1.5 The proposed development is below the threshold criteria; it is for fewer than ten homes, does not provide any car parking spaces and will utilise an all-electric energy strategy for the provision of heat and hot water. It can be concluded that the proposed development will not have a significant effect on existing local air quality, and thus this is not considered further within the assessment.
- 1.6 Due to the proximity of the proposed development to the busy Archway Road, the suitability of the site for residential development has been assessed. The main air pollutants of concern related to road traffic emissions are nitrogen dioxide and fine particulate matter (PM₁₀ and PM_{2.5}).
- 1.7 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, 2023a).
- 1.8 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. However, the SPG makes clear that only 'major' developments need to be assessed, which are defined in the London Plan as being developments of ten or more residential units. The proposed development is for only five residential units and it is, therefore, not a major development; a construction dust risk assessment is, thus, not required.
- 1.9 This report has been prepared taking into account all relevant local and national guidance and regulations.

¹ The IAQM is the professional body for air quality practitioners in the UK.

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
- National Planning Policy Framework
- London-Specific Policies

The London Plan

London Environment Strategy

Mayor's Transport Strategy

GLA LPG: Air Quality Neutral

Air Quality Focus Areas

- LBH Local Plan
- Building Standards
- Air Quality Action Plans
 - National Air Quality Plan
 - Local Air Quality Action Plan

3 Pollutants of Concern

- 3.1 The main air pollutants of concern related to road traffic emissions, and known to have adverse health impacts, are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}). UK-wide objectives for nitrogen dioxide and PM₁₀ 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 nitrogen dioxide and PM₁₀ 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 PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as at hotels. The 1-hour mean objective for nitrogen dioxide 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 (The European Parliament and the Council of the European Union, 2008), originally set at 25 µg/m³ and currently set at 20 µg/m³.
- 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/m³ by the end of 2040, with the interim target being a value of 12 µg/m³ by the start of 2028². 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, with the interim target being a reduction of 22% by the start of 2028.
- 3.5 Defra has provided advice (Defra, 2023a) which explains that there is no current requirement to consider the new PM_{2.5} targets in planning decisions and that guidance to local planning authorities will be forthcoming before this position changes. In the future, when planning decisions do need to consider the new targets, the expectation is that this will focus on reducing emissions from new development rather than there being a direct requirement for planning-related air quality assessments to predict PM_{2.5} concentrations.

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/m³ would not exceed the 10 µg/m³ target.

- 3.6 For the time being, therefore, no assessment is required, and indeed no robust assessment is possible, in relation to the new PM_{2.5} targets and they are not considered further.
- 3.7 As explained in Paragraph A2.20 of Appendix A2, the GLA has set a target to achieve an annual mean PM_{2.5} concentration of 10 µg/m³ 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, 2018) considers the 2005 guideline of 10 µg/m³. While there is no explicit requirement to assess against the GLA target of 10 µg/m³, it has nevertheless been included within this assessment.
- 3.8 The relevant air quality criteria for this assessment are provided in Table 1.

Table 1: Air Quality Criteria for Nitrogen Dioxide, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Value
Nitrogen Dioxide	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
PM _{2.5}	Annual Mean	20 µg/m ³ ^a
	Annual Mean	10 µg/m ³ by 2030

^a There is no numerical PM_{2.5} objective for local authorities (see Paragraph 3.2). Convention is to assess against the UK limit value which is currently 20 µg/m³.

4 Assessment Approach

Existing Conditions

4.1 Existing sources of emissions and baseline air quality conditions within the study area have been defined using a number of approaches:

- industrial sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2024a);
- information on existing air quality has been obtained by collating the results of monitoring carried out by the LBH;
- information on existing air quality has also been obtained through examination of the London Atmospheric Emissions Inventory (LAEI) database produced by the GLA (GLA, 2023b). These predicted concentrations cover the whole of the GLA area at 20 m grid resolution; and
- whether or not there are any exceedances of the annual mean limit value for nitrogen dioxide in the study area has been identified using the maps of roadside concentrations published by Defra (2020; 2024b). These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to identify and report exceedances of the limit value. The national maps of roadside PM₁₀ and PM_{2.5} concentrations (Defra, 2024b), which are available for the years 2009 to 2022, show no exceedances of the limit values anywhere in the UK in 2022.

Impacts of Road Traffic on Future Residents of the Proposed Development

- 4.2 The impacts of nitrogen dioxide, PM₁₀ and PM_{2.5} concentrations on new residents of the development have been assessed qualitatively. The assessment considers air quality conditions within the site taking account of local air quality monitoring data, proximity to local roads and the GLA's LAEI predicted concentrations.
- 4.3 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts.
- 4.4 The overall significance of the air quality impacts is determined based on comparison between the likely concentrations at the development and the air quality objectives. Where concentrations remain below the objectives, it can be concluded that the overall effect will be 'not significant'. The experience of the consultants preparing the report is set out in Appendix A3.

‘Air Quality Neutral’

- 4.5 The GLA’s London Plan Guidance (Air Quality Neutral) (GLA, 2023a) 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.
- 4.6 The guidance provides a simplified assessment approach for minor developments, which has been followed in this report.

5 Impact Assessment

Relevant Features

- 5.1 The proposed development is located adjacent to the A1 (Archway Road) in a predominantly residential area in Highgate. The location of the proposed development is highlighted in Figure 1.

Industrial Sources

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

Local Air Quality Monitoring

- 5.3 The LBH operates three automatic monitoring stations within its area, but none are located close to the proposed development. The LBH also operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by Lambeth Scientific Services (using the 50% TEA in acetone method). One of these (HR06) is located approximately 280 m northwest of the proposed development.
- 5.4 Monitoring results for the years 2016 to 2022³ are summarised in Table 2. The monitoring data have been taken from LBH's 2022 Annual Status Report (LBH, 2023). The monitoring location is shown in Figure 2.

Table 2: Summary of Annual Mean NO₂ Monitoring (2016 - 2022) (µg/m³)

Site No.	Site Type	Location	2016	2017	2018	2019	2020	2021	2022
HR06	Roadside	200A, Archway Road, N6 5BA	44.0	41.0	35.0	36.3	30.2	32.8	35.2
Objective			40						

^a Exceedances of the objective are shown in bold.

- 5.5 Exceedances of the annual mean nitrogen dioxide objective were measured at monitor HR06 in 2016 and 2017 but the concentrations have been below the objective since 2018. Since the annual mean nitrogen dioxide concentrations are well below 60 µg/m³, it is unlikely that the 1-hour mean objective was exceeded at monitor HR06 in any recent year⁴.

³ 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 impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

⁴ Measurements across the UK have shown that the 1-hour mean nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m³ (Defra, 2022).

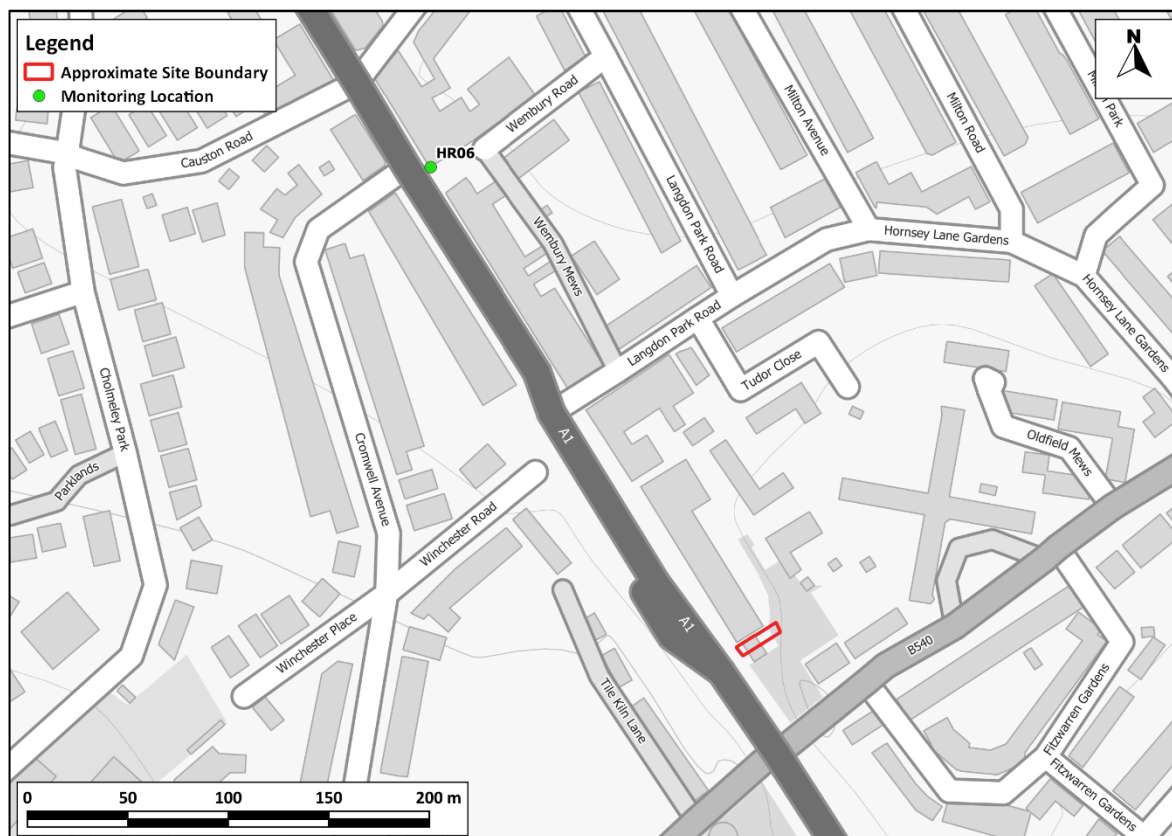


Figure 2: Monitoring Location

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- 5.6 The only automatic monitor operated by LBH monitoring PM₁₀ and PM_{2.5} concentrations is located adjacent to the A105 (High Road), Hornsey, approximately 3.3 km northeast of the proposed development. No exceedances of the respective PM₁₀ and PM_{2.5} objectives have been measured at this monitor since it was installed in 2021.

LAEI Predicted Concentrations

- 5.7 The maximum LAEI modelled concentrations of NO₂, PM₁₀, and PM_{2.5} at the proposed development are shown in Table 3 for 2025 (the anticipated opening year of the proposed development) and 2030 (the PM_{2.5} GLA target year). In each year, maximum pollutant concentrations and the number of days with PM₁₀ concentrations greater than 50 µg/m³, are well below their respective objectives. The annual mean PM_{2.5} concentration is marginally above the GLA target in 2025, however it is met by the target year of 2030.

Table 3: Maximum Modelled LAEI Concentrations at the Proposed Development ($\mu\text{g}/\text{m}^3$)

Year	NO ₂	PM ₁₀	Number of Days PM ₁₀ >50 $\mu\text{g}/\text{m}^3$	PM _{2.5}
2025	23.1	18.4	7	10.6
2030	17.6	17.1	5	9.6
Objective / GLA target	40	40	35	20/10 ^a

^a The 20 $\mu\text{g}/\text{m}^3$ 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 $\mu\text{g}/\text{m}^3$ is the GLA target for annual mean PM_{2.5}; again, there is no requirement for local authorities to meet this.

Exceedances of Limit Value

- 5.8 There are several AURN monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean nitrogen dioxide limit value (Defra, 2024c). Furthermore, Defra's roadside annual mean nitrogen dioxide concentrations, 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 the A1 (Archway Road) adjacent to the proposed development. Defra's predicted concentrations for 2025 (Defra, 2020) do not identify any exceedances within 1 km of the proposed development. 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.
- 5.9 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.

Impacts of Road Traffic Emissions on Future Residents of the Development

- 5.10 The proposed development is located adjacent to the busy A1 (Archway Road). The measured annual mean nitrogen dioxide concentration at monitor HR06, located adjacent to Archway Road approximately 280 m to the northwest of the proposed development, was below the objective in 2022 (see Table 2). Monitoring site HR06, is judged to be representative of air quality conditions at proposed development. Air quality is generally expected to improve with time, due, for example, to more stringent emissions standards for motor vehicles and the uptake of low and zero emission vehicles. Therefore, it is reasonable to expect that annual mean nitrogen dioxide concentrations will be below the objective at the proposed development.

- 5.11 Furthermore, the maximum LAEI predicted concentrations of NO₂, PM₁₀ and PM_{2.5} across the site in 2025, which is the anticipated year of first occupation, are well below their respective objectives. The PM_{2.5} concentration is marginally above the GLA target in 2025, however the target will be met by 2030.
- 5.12 It can be therefore considered that future residents of the proposed development will experience acceptable air quality, and the impact of air quality on future residents will not be significant.

‘Air Quality Neutral’

- 5.13 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 above). The air quality neutral assessment has been undertaken using the latest GLA’s London Plan Guidance (Air Quality Neutral) (GLA, 2023a).

Building Emissions

- 5.14 The proposed development does not include any combustion plant for the routine provision of electricity, heating, or hot water. Paragraph 2.2.1 of the guidance states that developments which “do not include new combustion plant such as gas-fired boilers” are “assumed to be Air Quality Neutral”.
- 5.15 Therefore the proposed development is air quality neutral in terms of building emissions.

Road Transport Emissions

- 5.16 The proposed development will not provide any car parking and therefore the maximum car parking standards defined in the London Plan are not exceeded. The guidance explains that where minor developments do not exceed the maximum car parking standards, they can be assumed to meet the Transport Emissions Benchmark (TEB)”.
- 5.17 Therefore the proposed development is better than air quality neutral in terms of building emissions.

Summary

- 5.18 The proposed development therefore complies with the requirement that all new developments in London are at least air quality neutral.

6 Mitigation

Good Design and Best Practice

- 6.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required.
- 6.2 The EPUK/IAQM guidance predates the recent publication by Defra of long-term air quality targets for PM_{2.5}. While it is not appropriate to determine individual planning applications based on whether future PM_{2.5} concentrations in an area will be above or below the concentration target, it is nevertheless appropriate that new development contributes to meeting the national targets by ensuring that air quality is taken into account in development design.
- 6.3 The proposed development incorporates the following good design and best practice measures, which have been accounted for in the assessment as far as is possible:
- use of an all-electric energy strategy to avoid the need for on-site combustion;
 - provision of secure cycle parking spaces; and
 - no parking provision on site.

Recommended Mitigation

Road Traffic Impacts

- 6.4 The assessment has demonstrated that the overall air quality effect of the proposed development will be 'not significant', as it will not introduce any new exposure into areas of unacceptable air quality. It is, therefore, not considered appropriate to propose further mitigation measures for this development.

Air Quality Neutral

- 6.5 The proposed development is air quality neutral both in terms of transport and building emissions, therefore no mitigation is required.

7 Conclusions

Impacts

- 7.1 The assessment has considered air quality conditions that future residents will experience.
- 7.2 Air quality conditions for future residents of the proposed development have been shown to be acceptable, with concentrations below the air quality objectives throughout the site. PM_{2.5} concentrations will also meet the GLA target by 2030.
- 7.3 The overall operational air quality effects of the proposed development are judged to be 'not significant'.

Policy Implications

- 7.4 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 191 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 192, as it will not affect compliance with relevant limit values or national objectives.
- 7.5 The proposed development is also consistent with Policy DM23 of LBH's Local Plan, as it is designed to improve air quality in the Borough, providing no onsite car parking and having an all-electric energy strategy.
- 7.6 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 any exceedances of legal air quality limits;
 - it will not create new exposure to poor air quality; and
 - it is better than air quality neutral.

8 References

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9 Glossary

AADT	Annual Average Daily Traffic
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
CAZ	Clean Air Zone
Defra	Department for Environment, Food and Rural Affairs
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
GLA	Greater London Authority
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LBH	London Borough of Haringey
LDV	Light Duty Vehicles (<3.5 tonnes)
LEZ	Low Emission Zone
µg/m³	Microgrammes per cubic metre
NO₂	Nitrogen dioxide
NPPF	National Planning Policy Framework
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

OLEV	Office for Low Emission Vehicles
PM₁₀	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
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 nitrogen dioxide
TEB	Transport Emissions Benchmark
TfL	Transport for London
ULEZ	Ultra Low Emission Zone

10 Appendices

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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 m² 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 m² 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 mgNO_x/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:

Spark ignition engine: 250 mgNO_x/Nm³;

Compression ignition engine: 400 mgNO_x/Nm³;

Gas turbine: 50 mgNO_x/Nm³.

- 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 mgNO_x/Nm³ and 25 mgPM/Nm³.

A1.5 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”.

A1.6 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 nitrogen dioxide), 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

A1.7 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 m² of floor space for all other uses or a site area greater than 1 ha.

A1.8 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.

A1.9 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.

A1.10 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.

A1.11 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 NO_x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NO_x gas boiler or a 30kW CHP unit operating at <95mg/Nm³.

In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.

Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable”.

- A1.12 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”.

- A1.13 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”.

- A1.14 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

- A1.15 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.

- A1.16 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.

A1.17 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.

A1.18 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 A3.

A2 Policy Context

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.

Reducing Emissions from Road Transport: Road to Zero Strategy

- A2.4 The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper (DfT, 2018) in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.
- A2.5 The paper sets out a number of measures by which Government will support this transition but is clear that Government expects this transition to be industry and consumer led. The Government has recently announced that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades.

Environment Act 2021

- A2.6 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.
- A2.7 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 3.4.

Environmental Improvement Plan 2023

- A2.8 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.
- A2.9 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 A2.7, and interim targets to be achieved by 2028.
- A2.10 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

- A2.11 The National Planning Policy Framework (NPPF) (2023) 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”.

- A2.12 To prevent unacceptable risks from air pollution, Paragraph 180 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 quality”.

A2.13 Paragraph 191 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”.

A2.14 More specifically on air quality, Paragraph 192 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.”.

A2.15 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.

A2.16 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

A2.17 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”.

A2.18 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”.

A2.19 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 LPG: Air Quality Neutral

- A2.22 The GLA's Air Quality Neutral LPG outlines the assessment approach for determining whether a development is Air Quality Neutral (GLA, 2023a). The guidance sets out benchmarks for the maximum allowable emissions of NO_x 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

- A2.23 The GLA has identified 160 air quality Focus Areas in London. These are locations that not only exceed the annual mean limit value for nitrogen dioxide, 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 proposed development is not located close to any the GLA air quality Focus Areas.

Local Policies

- A2.24 The LBH's Local Plan sets out a vision and key policies for development in the Borough up to 2026 and is made up of the Strategic Policies, Development Management Policies, Site Allocations and Tottenham Area Action Plan, alongside the London Plan.
- A2.25 The LBH has prepared a Development Management Development Plan Document (DPD) (LBH, 2017) which sets out planning policies to help determine which developments are granted planning permission in Haringey. Within this, 'Policy DM23 Environmental Protection' states with regards to air quality:

"A. All development proposals should consider air quality and be designed to:

- a) Improve or mitigate the impact on air quality in the Borough; and*
- b) Improve or mitigate the impact on air quality for the occupiers of the building or users of the development.*

B. Air quality assessments will be required for all major development and other development proposals, where appropriate.

C. Where necessary, adequate mitigation must be provided.”

A2.26 The LBH has started work on a new Local Plan, which is intended to run from 2022 to 2037. A Draft Local Plan is expected to be published in summer 2024 for consultation.

A2.27 The LBH has also adopted a Supplementary Planning Document (SPD) on Sustainable Design and Construction (LBH, 2013). Section 7 of the document relates to ‘Pollution’ and, in relation to air quality, states:

“Haringey is designated an Air Quality Management Area for the pollutants of nitrogen dioxide and respirable particulates. Any major development will require an Air Quality Assessment (AQA) to be submitted with the planning application. Developments should have regard to these pollutants at the initial design stage”.

Building Standards

A2.28 Part F(1) of Schedule 1 of the Building Regulations 2010 as amended June 2022 (Ministry of Housing, Communities & Local Government, 2022) places a duty on building owners, or those responsible for relevant building work⁵, to ensure adequate ventilation is provided to building occupants.

A2.29 Approved Document F (HM Government, 2021), which accompanies the Building Regulations, explains that care should be taken to minimise entry of external air pollutants. Specific steps should be taken to manage ventilation intakes where the building is near to a significant source of emissions, or if local ambient concentrations exceed values set in the Air Quality Standards Regulations 2010. These steps include maximising the distance between emission source and air intake, considering likely dispersion patterns, and considering the timing of pollution releases when designing the ventilation system.

A2.30 Compliance with the Building Regulations is not required for planning approval, but it is assumed that the Regulations will be complied with in the completed development.

Air Quality Action Plans

National Air Quality Plan

A2.31 Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide 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-

⁵ Building work is a legal term for work covered by the Building Regulations. With limited exemptions, the Regulations apply to all significant building work, including erecting or extending a building.

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

A2.32 The LBH declared a borough-wide AQMA for exceedances of the annual mean NO₂ objective and 24-hour mean PM₁₀ objective in 2001; the most recent Air Quality Action Plan covers the period of 2019 to 2024 (LBH, 2019). This Plan outlines the actions that will be taken to improve air quality in the Borough under the following seven broad topics:

1. *“Monitoring and other core statutory duties: maintaining monitoring networks is critical for understanding where pollution is most acute, and what measures are effective to reduce pollution. There are also several other very important statutory duties undertaken by boroughs, which form the basis of action to improve pollution;*
2. *Emissions from developments and buildings: emissions from buildings account for about 15% of the Nitrogen Oxides (NO_x) emissions across London so are important in affecting Nitrogen Dioxide (NO₂) concentrations;*
3. *Public health and awareness raising: increasing awareness can drive behavioural change to lower emissions as well as to reduce exposure to air pollution;*
4. *Delivery servicing and freight: vehicles delivering goods and services are usually light and heavy-duty diesel-fuelled vehicles with high primary NO₂ emissions;*
5. *Borough fleet actions: our fleet includes light and heavy-duty diesel-fuelled vehicles such as minibuses and refuse collection vehicles with high primary NO₂ emissions. Tackling our own fleet means we will be leading by example;*
6. *Localised solutions: these seek to improve the environment of neighbourhoods through a combination of measures; and*
7. *Cleaner transport: road transport is the main source of air pollution in London. We need to incentivise a change to walking, cycling and ultra-low emission vehicles (such as electric).”*

A3 Professional Experience

Dr Denise Evans, BSc (Hons) PhD MEnvSc MIAQM

Dr Evans is a Technical Director with AQC, with more than 24 years' relevant experience. She has prepared air quality review and assessment reports for local authorities, and has appraised local authority air quality assessments on behalf of the UK governments, and provided support to the Review and Assessment helpdesk. She has extensive modelling experience, completing air quality and odour assessments to support applications for a variety of development sectors including residential, mixed use, urban regeneration, energy, commercial, industrial, and road schemes, assessing the effects of a range of pollutants against relevant standards for human and ecological receptors. Denise has acted as an Expert Witness and is a Member of the Institute of Air Quality Management.

Isabel Stanley, MSci (Hons)

Miss Stanley is a Senior Consultant with AQC, having joined the company in October 2019. Prior to joining AQC she completed an MSci degree in Geology at the University of Bristol, where her studies included modules focusing on GIS, dispersion modelling and environmental geochemistry. She has undertaken numerous air quality assessments, including road traffic and plant emissions modelling, as well as indoor air quality plans and construction dust risk assessments.

Wale Abiye, MEnvSc MIAQM

Dr Abiye is an Assistant Consultant with AQC and joined the company in 2022. Prior to joining the company, he worked as a Research Fellow in Nigeria. He obtained his master's and PhD degrees from Obafemi Awolowo University, Ile-Ife, Nigeria. He is experienced in monitoring urban air pollution and analysing its chemical constituents, as well as using dispersion modelling to assess air quality. He is nominated to the United Nations Framework Convention on Climate Change's Roster of Experts.