Air Quality Assessment	
23 Ravenshaw Street, Camden	
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Executive Summary

The air quality impacts associated with the operation of the proposed residential development at 23 Ravenshaw Street, London, NW6 1NP have been assessed.

Existing air quality conditions have been described using information published by Camden Council, Defra and the Environment Agency.

The operational impacts have been assessed qualitatively based on the volumes of traffic on local roads and the nearby Midland Mainland railway, the distance of sensitive receptors within the proposed development from emissions sources, the background air quality and existing modelled concentration maps. Concentrations of nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$), the key air pollutants associated with road and rail traffic, have been determined from existing data and compared with air quality objectives set by the Government to protect human health.

Existing conditions within the study area show poor air quality close to Mill Lane to the north of the application site, with concentrations of nitrogen dioxide exceeding the annual mean objective; however, measured and modelled background data show that air quality away from emissions sources will be acceptable. The site lies within an Air Quality Management Area.

The application site is located approximately 85 m from any significant road traffic sources and the rear façade of the proposed development is almost 30 m from the closest railway line, which does not have a high usage of diesel locomotives. Existing modelled concentration maps predict pollutant concentrations below the air quality objectives at the application site. Therefore, air quality conditions for new residents would be acceptable and there should be no constraints to development at the application site with regard to air quality.

Overall, the operational air quality impacts on the proposed development are judged to be *insignificant*.

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1 Introduction

1.1. Proposed Development

1.1.1 Air Quality Assessments Ltd (AQA) has been commissioned by Chris Taylor to undertake an air quality assessment for the proposed development at 23 Ravenshaw Street, London, NW6 1NP.

1.1.2 The application site is bounded by Ravenshaw Street to the northeast, neighbouring residential properties to the north and southeast, and the railway embankment of the Midland Mainline railway to the south/southwest. It lies within an Air Quality Management Area (AQMA) declared by Camden council.

1.1.3 The proposed development will involve the demolition of an existing building at the site, and the construction of a new residential apartment block.

1.2. Scope of Assessment

1.2.1 This report describes the existing air quality conditions in proximity to the site. The scale of the development is such that it will not significantly increase traffic on local roads; however, the new residential properties will be subject to the impacts of road traffic emissions from the adjacent road network, and emissions from diesel locomotives on the adjacent railway. The main air pollutants of concern related to road and rail traffic emissions are nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$).

1.2.2 The site is located in close proximity to Midland Mainline railway line, which runs northwest to southeast approximately 19 m southwest of the application site boundary. Defra guidance (Defra, 2009) outlines an approach to assess the potential for exceedences of the nitrogen dioxide objectives as a result of emissions from diesel and steam locomotives. The distance criterion for stationary locomotives is exposure within 15 m, while that for moving locomotives is 30 m. The application site boundary is within 30 m of the railway. Camden Council has raised concerns that emissions from the railway will impact on future residents of the proposed development; therefore, the risk of impacts from railway emissions have been considered.

1.2.3 The assessment has been prepared taking into account all relevant local and national guidance and regulations, and follows a methodology agreed with Camden Council.

1.2.4 The references and a glossary of common air quality terminology used in this assessment are shown in **Section 9** and **Section 10** respectively.

2 Air Quality Legislation and Policy

2.1. EU Limit Values

2.1.1 The European Union's Directive on ambient air quality and cleaner air for Europe (European Parliament, Council of the European Union, 2008) set legally binding limit values for NO_2, PM_{10} and $PM_{2.5}$. The Air Quality Standards Regulations 2010 (The Stationary Office, 2010) implement the EU Directive limit values in English legislation. Achievement of the limit values is a national obligation rather than a local one.

2.1.2 The limit values are the same as the objective values (see **Table 1**); however, the compliance dates differ, and the limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway). The PM_{10} and NO_2 limit value applied from 2005 and 2010 respectively, whereas the $PM_{2.5}$ limit value will apply from2015.

2.2. The Air Quality Strategy

2.2.1 Part IV of The Environment Act 1995 required the UK Government to prepare an Air Quality Strategy. The Air Quality Strategy (Defra, 2007), provides an overview and outline of ambient air quality policy in the UK and the devolved administrations. The strategy sets out air quality standards and objectives intended to protect human health and the environment.

2.2.2 Standards are the concentrations of pollutants in the atmosphere, below which there is a minimum risk of health effects or ecosystem damage; they are set with regard to scientific and medical evidence. Objectives are the policy targets set by the Government, taking account of economic efficiency, practicability, technical feasibility and timescale, where the standards are expected to be achieved by a certain date.

2.2.3 The Air Quality Strategy also describes the system of Local Air Quality Management (LAQM), introduced in Part IV of the Environment Act 1995, which requires every local authority to carry out regular review and assessments of air quality in its area. Where an objective has not been, or is unlikely to be achieved, the local authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which sets out appropriate measures to be introduced in pursuit of the objectives.

2.2.4 The objectives for NO_2 and PM_{10}, as prescribed by the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 (The Stationary Office, 2000; The Stationary Office, 2002), are shown in **Table 1**. The objectives for PM_{10} and NO_2 were to have been achieved by 2004 and 2005 respectively, and continue to apply in all future years thereafter. The $PM_{2.5}$ objective, also shown in **Table 1**, is to be achieved by 2020; however, there is no obligation for local authorities to try to meet the $PM_{2.5}$ objective, and it is not included in the Regulations.

Table 1: The Objectives for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Concentration Measured As	Objective
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
$PM_{2.5}$	Annual Mean	25 µg/m^3

2.2.5 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the Local Air Quality Management Technical Guidance (Defra, 2009) issued by the Department for Environment, Food and Rural Affairs (Defra). The annual mean NO_2 and PM_{10} objectives should apply at the building façades of residential properties, schools, hospitals, care homes etc.; they should not apply at the building façades of places of work, hotels, gardens or kerbside sites. The 24-hour mean PM_{10} objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels. The 1-hour mean NO_2 objective should apply at all locations where the annual and 24-hour mean objectives apply, as well as at kerbside sites where the public have regular access, e.g. the pavements of busy shopping streets.

2.3. Planning Policy

National Policies

2.3.1 The National Planning Policy Framework (NPPF) (DCLG, 2012) sets out planning policy for England and acts as guidance for local planning authorities in drawing up plans and as a material consideration in determining applications. It places a general presumption in favour of sustainable development, stressing that the planning system should perform an environmental role to minimise pollution.

2.3.2 The NPPF states that:

"The planning system should contribute to conserving and enhancing the environment and reducing pollution by: preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability." (Paragraph 109).

2.3.3 The NPPF goes on the say that:

"To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location.

The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account." (Paragraph 120).

2.3.4 With specific reference to air quality, the NPPF states that:

"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan." (Paragraph 124).

2.3.5 The NPPF is supported by Planning Practice Guidance (PPG) (DCLG, 2014). The PPG states that:

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit".

2.3.6 The PPG goes on to state that:

"Whether or not air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife)."

2.3.7 The PPG also sets out the information that may be required in an air quality assessment, stating that:

"Assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality".

2.3.8 It also provides guidance on options for mitigating air quality impacts, and makes clear that:

"Mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact".

Regional Policies

2.3.9 The London Plan (GLA, 2011) sets out the spatial development strategy for London and presents a London-wide policy framework, including Policy 7.14 Improving Air Quality, which states that development proposals should:

"a) minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people)

such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3);

b) promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' 'The control of dust and emissions from construction and demolition';

c) be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs));

d) ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches; and

e) where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified."

2.3.10 The London Plan is supported by Supplementary Planning Guidance, (SPG) on Sustainable Design and Construction (GLA, 2014a) and The Control of Dust and Emissions during Construction and Demolition (GLA, 2014b). The SPGs include criteria that require an air quality neutral and a dust risk assessment for all major developments in London, a major residential development being defined in the London Plan as having 10 or more dwellings. The proposed development is not classed as a major development.

2.3.11 The Mayor's Air Quality Strategy (GLA, 2010) explains the actions that the Mayor will take to improve air quality in London, with the aim of achieving compliance with the EU limit values as soon as possible. The Strategy includes a number of measures to improve air quality, including those that encourage the use of sustainable transport modes, promote the use of cleaner vehicles, improve traffic management and use the planning process to improve air quality.

Local Policies

2.3.12 Camden Council's Local Development Framework (LDF) includes Camden Development Policies 2010-2025 (Camden Council, 2010), which sets out the detailed planning policies that the Council will use when determining applications for planning permission. Policy DP32 Air Quality and Camden's Clear Zone states:

"The Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality."

2.3.13 Camden Council also publishes online guidance on when an air quality assessment is required (Camden Council, 2015). A basic assessment is required for:

"Developments where local residents will be exposed to poor air quality (due to its location next to a busy road/diesel railway lines or in a generally congested area)."

Air Quality Action Plan

2.3.14 Camden Council has developed an Air Quality Action Plan (AQAP) for the AQMA (Camden Council, 2013). The AQAP sets out measures that the council intends to implement in order to help meet the objectives. Overall, the measures aim to reduce emissions from transport, new development, gas boilers and industrial processes, raise awareness of air quality and promote lobbying and partnership working.

3 Methodology

3.1. Consultation

3.1.1 This assessment has been undertaken in accordance with the following methodology, which was agreed with Amy Farthing, Sustainability Officer at Camden Council, via email correspondence between the 14th and 20th February 2015.

3.2. Existing Conditions

3.2.1 Information on existing air quality within the study area has been collated from the following sources:

- The results of monitoring and the LAQM review and assessment reports undertaken by Camden Council;
- Current exceedences of the annual mean NO_2 EU limit value have been identified using maps of roadside concentrations published by Defra (Defra, 2015a)[1];
- Background pollutant concentration maps published by Defra (Defra, 2015b). These cover the whole country on a 1 x 1 km grid;
- Local industrial and waste management sources have been screened using Defra's Pollutant Release and Transfer Register (Defra, 2015c) and the Environment Agency's 'What's in your backyard' website (Environment Agency, 2015).

3.3. Operational Impacts

3.3.1 The impact on air quality at the proposed development due to emissions from road and rail traffic have been assessed qualitatively based on:

- The volume of traffic on local roads and the railway;
- The distance of sensitive receptors within the proposed development from the emissions sources; and
- The background air quality at the application site and annual mean concentration maps published in the London Atmospheric Emissions Inventory 2010 (GLA, 2013) and by Kings College London on the London Air website (King's College London, 2015).

[1] There are no exceedences of the PM_{10} limit values.

4 Baseline Conditions

4.1. Site Description

4.1.1 The application site is located on Ravenshaw Street in a residential area, approximately 85 m to the south of Mill Lane (see **Figure 1**). Ravenshaw Street leads onto Broomsleigh Street, which forms a cul-de-sac where it reaches the railway line. Therefore, there will be no through traffic on Ravenshaw Street, and traffic volumes will be very low.

4.2. Industrial Sources

4.2.1 The search of the UK Pollutant Release and Transfer Register, and Environment Agency's 'What's in your backyard?' websites did not identify any significant industrial or waste management sources that are likely to affect air quality at the application site.

4.3. EU Limit Values

4.3.1 There are no AURN monitoring sites located within 1 km of the application site. Modelling is not undertaken by Defra on Ravenshaw Street or Mill Lane; however, exceedences of the nitrogen dioxide limit value are predicted along Shoot-up Hill in 2012, approximately 350 m to the west of the application site. Shoot-up Hill forms part of the A5 and is a major road into the centre of London; therefore, predicted concentrations will not be representative of those at the application site. Detailed maps of future year predictions are not available.

4.4. LAQM Review and Assessment

4.4.1 Camden Council has declared the entire borough an AQMA for exceedences of the annual mean nitrogen dioxide objective, and the 24-hour mean PM_{10} objective.

4.5. Local Air Quality Monitoring

4.5.1 Camden Council operates four automatic monitoring sites within its area. Three of the automatic monitoring sites measure roadside concentrations adjacent to busy roads, and one measures urban background concentrations at Bloomsbury, in the centre of London. The data from the automatic monitoring sites will not be representative of air quality at the application site.

4.5.2 Camden Council also operates a number of diffusion tube monitoring sites, one of which, measuring roadside concentrations outside Emmanual Primary School, is located on Mill Lane, approximately 500 m to the northeast of the application site. Another is located on Frognal Way, and measures urban background concentrations approximately 1.5 km to the northeast of the application site. Measured annual mean NO_2 concentrations are shown in **Table 2**, and the monitoring locations are shown in **Figure 1**.

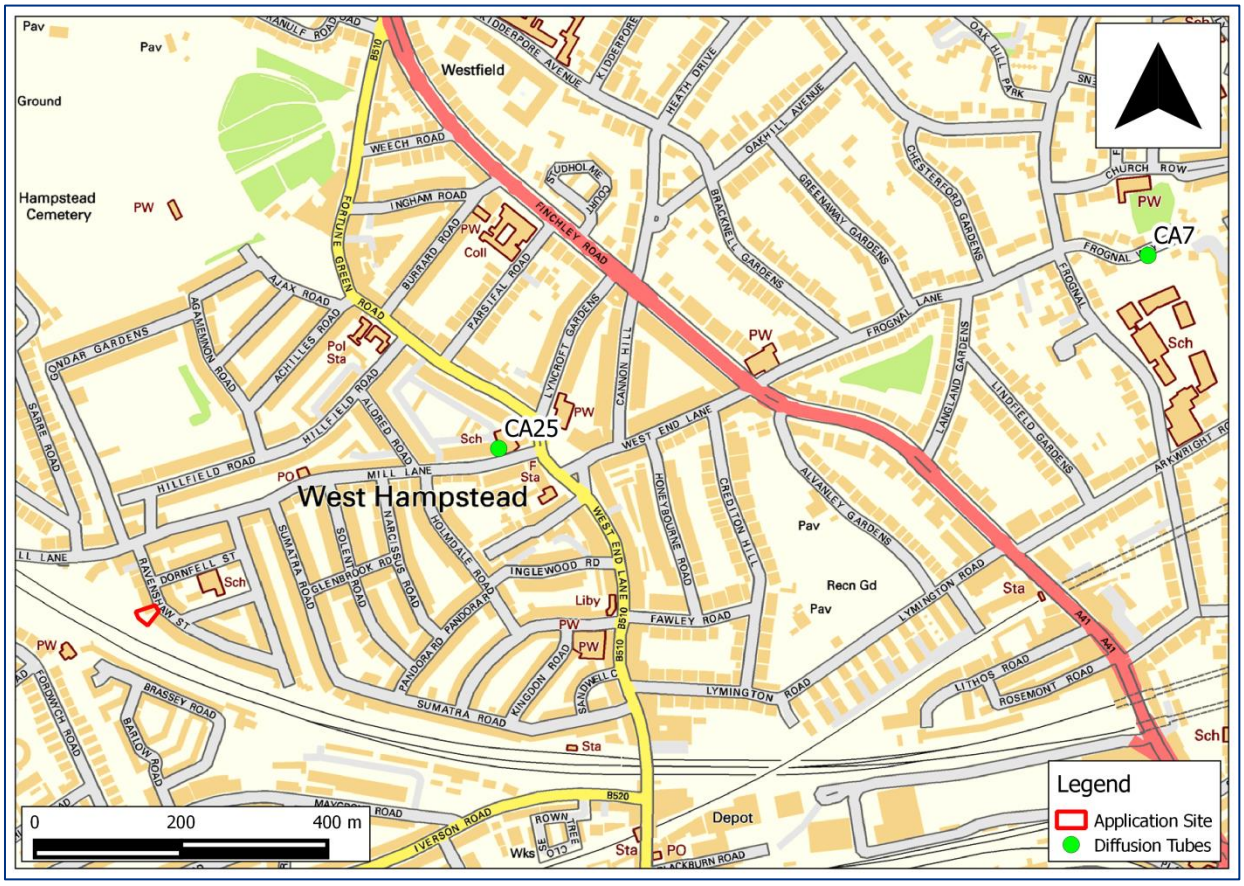

Figure 1: Application Site and Air Quality Monitoring Sites
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Table 2: Measured Annual Mean NO_2 Concentrations (2009 to 2013) [a]

Site ID	Location	Site Type [b]	Annual Mean (µg/m^3)				
			2009	2010	2011	2012	2013
CA7	Frognal Way	UB	33.9	29.0	31.5	28.9	32.0
CA25	Emmanuel Primary School	R	-	-	**41.5**	**45.9**	**57.9**
Objective			**40**				

a Exceedences are shown in bold.
b UB = urban background, R = roadside.

4.5.3 The monitoring results show that annual mean nitrogen dioxide concentrations have exceeded the objective close to Mill Lane (CA25); however, at the urban background monitoring site away from significant emissions sources (CA7), annual mean concentrations ranged from 29.0 to 33.9 µg/m^3 between 2009 and 2013.

4.5.4 No PM_{10} or $PM_{2.5}$ monitoring is undertaken close to the application site..

4.6. Background Concentrations

4.6.1 Estimated background concentrations at the application site are shown in **Table 3**. The background concentrations have been derived from data in the national maps published by Defra, calibrated against measurements made at the CA7 diffusion tube monitoring site (see **Appendix A1**). The background concentrations are well below the objectives.

Table 3: Estimated Annual Mean Background Concentrations in 2015 (µg/m^3)

Grid Square	NO_2	PM_{10}	$PM_{2.5}$
524500,185500	28.4	21.2	14.5
Objective	**40**	**40**	**25**

5 Impact Assessment

5.1. Road Traffic Emissions

5.1.1 The application site is located approximately 85 m to the south of Mill Lane. Pollutant concentrations reduce rapidly with distance from source, and ambient concentrations at urban locations over 50 m from major emissions sources would generally be at background levels, i.e. similar to those measured at the CA7 diffusion tube, as shown in **Table 2**, and modelled by Defra in **Table 3**.

5.1.2 As Ravenshaw Street leads onto a cul-de-sac, traffic volumes will be minimal, with an insignificant impact on concentrations at the front façade of the proposed development. Therefore, pollutant concentrations at the building façade facing onto Ravenshaw Street are likely to be close to background levels.

5.2. Rail Emissions

5.2.1 Measured on a map, the application site boundary and the proposed building façade are approximately 19 m and 25 m respectively from the closest railway line. The railway line is located at the bottom of an embankment, and thus the distance of the building façade from the emissions source is actually greater than 25 m, and is likely to be close to the 30 m distance criterion in the Defra guidance (Defra, 2009).

5.2.2 The Defra guidance also presents a list of railway lines with a high usage of diesel locomotives that should be considered by local authorities when undertaking review and assessments under their LAQM obligations. The Midland Mainline is not included and thus is likely to have a relatively low volume of diesel locomotive movements.

5.2.3 Predicted annual mean nitrogen dioxide concentrations in 2015 from the LAEI database are shown in **Figure 2**. Annual mean concentrations at the application site are predicted to be below the annual mean objective, with a maximum concentration of 36.6 µg/m^3 at the proposed building facade. The maximum predicted annual mean nitrogen dioxide concentration at the application site boundary is 37.6 µg/m^3.

5.2.4 Predicted annual mean nitrogen dioxide concentrations in 2010 from the London Air website are shown in **Figure 3**. Annual mean concentrations at the application site are predicted to be below the objective, at around 37 µg/m^3, which correlates closely with the modelling undertaken for the LAEI.

5.2.5 Predicted concentrations of PM_{10} from the LAEI database are much lower than the nitrogen dioxide concentrations, with a maximum annual mean of 22.1 µg/m^3 predicted at the application site. The maximum number of days with PM_{10} greater than 50 µg/m^3 is predicted to be 3.

5.2.6 Given the distance of the proposed development from the road and rail emissions sources, the modelled and measured background concentrations in the area and the results of modelling undertaken across London for the LAEI and by Kings College London, it is considered that air quality at the application site is likely to be acceptable, and that there should be no constraints to development at the site with regard to air quality.

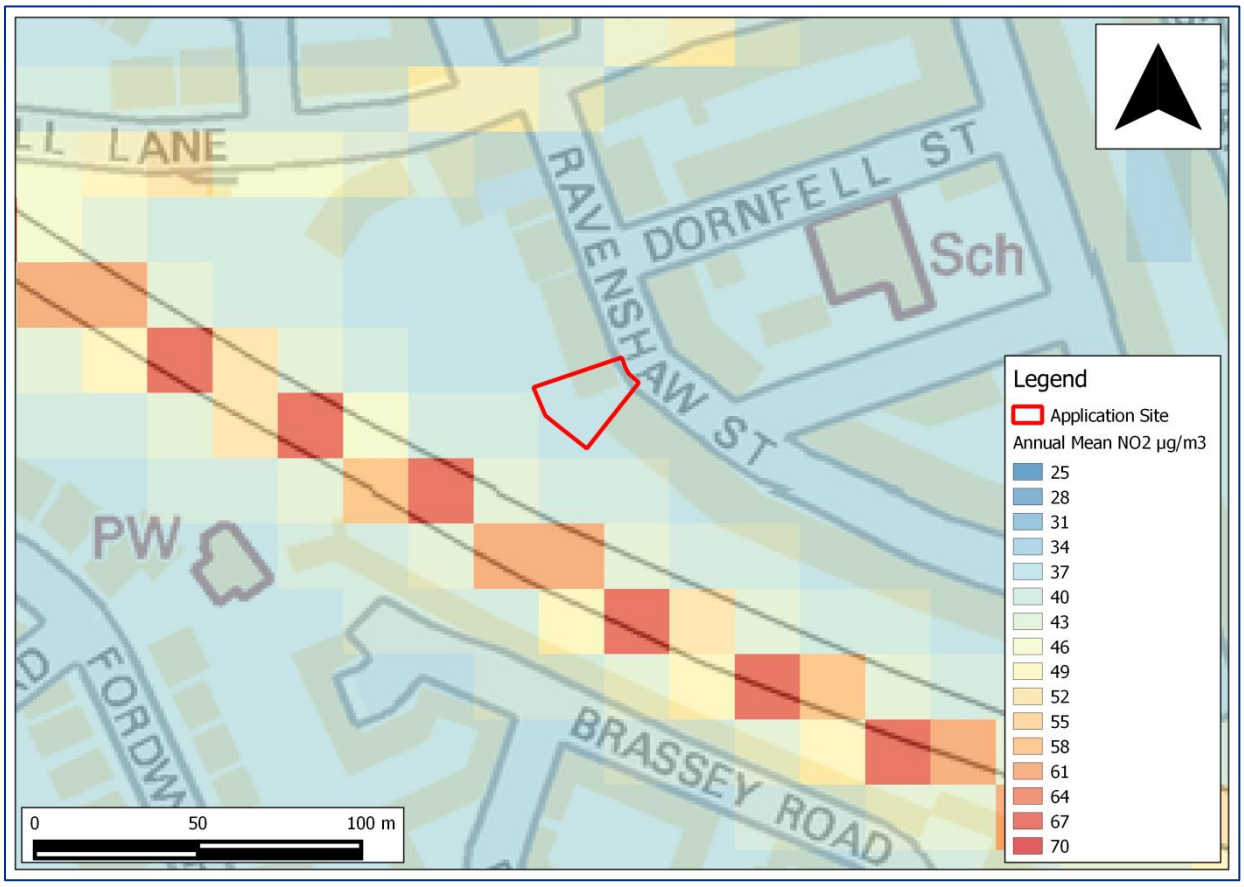

Figure 2: Predicted Annual Mean NO_2 Concentrations from the LAEI Database
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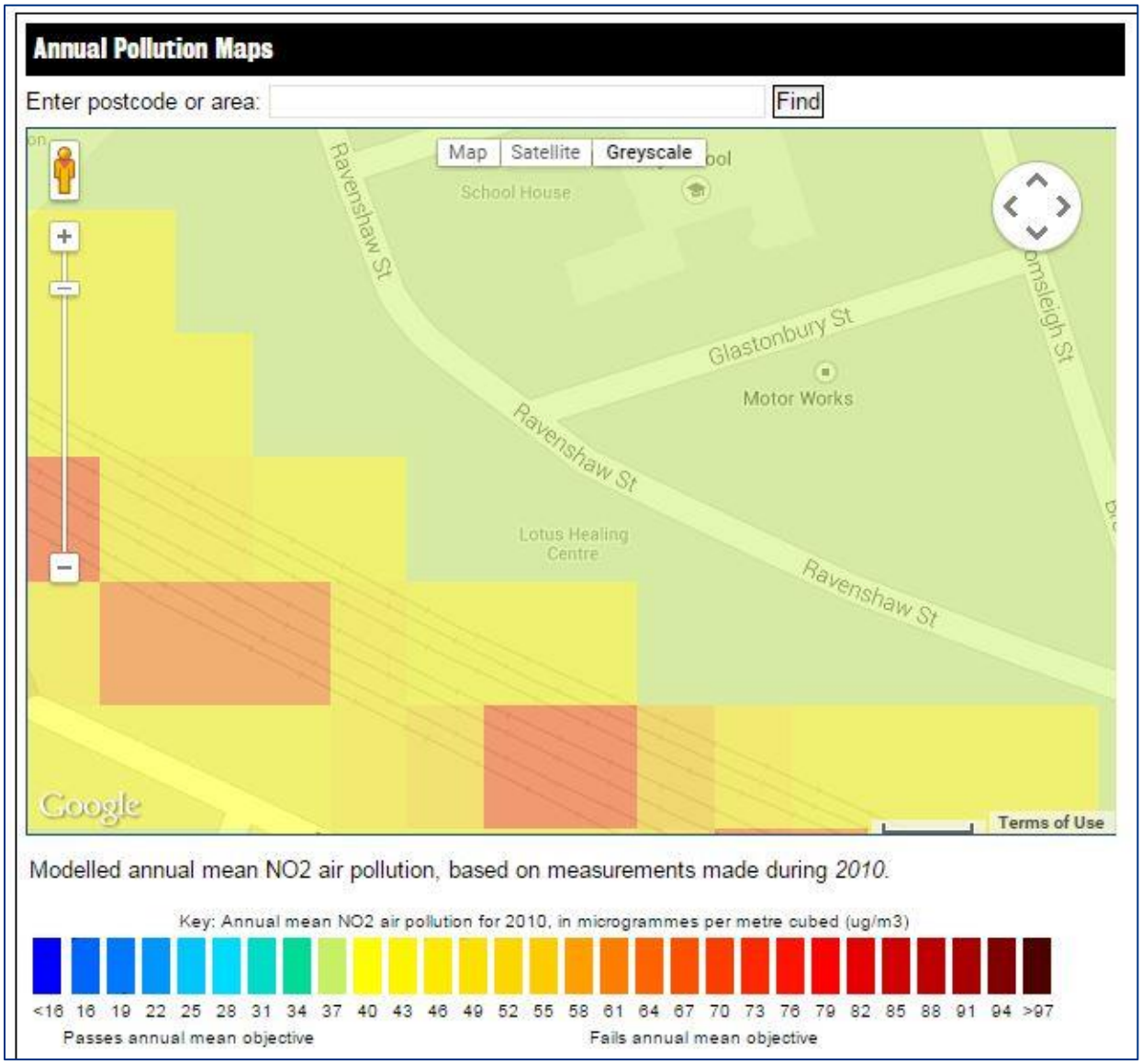

Figure 3: Predicted Annual Mean NO_2 Concentrations from the London Air website (King's College London, 2015)

6 Mitigation

6.1. Operational Phase

6.1.1 The assessment has demonstrated that new receptors will not be located in an area where the air quality objectives are exceeded. Mitigation measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation. It is not considered appropriate to propose further mitigation measures for this scheme.

7 Residual Impacts

7.1. Operational Phase

7.1.1 The residual impacts will be the same as those identified in **Section 5.**

8 Conclusions

8.1.1 The impacts due to emissions from local road traffic and diesel locomotives on the air quality for residents living in the proposed development have been shown to be acceptable.

8.1.2 The overall operational air quality impacts on the development are judged to be *insignificant*. This conclusion is based on existing measured and modelled data that show concentrations across the application site below the air quality objectives.

8.1.3 There should be no constraints to development at the application site with regard to air quality as the proposed development is consistent with:

- The NPPF;
- Policy 7.14 of The London Plan, and the SPGs relating to air quality;
- Policy DP32 of Camden Council's LDF; and
- Camden Council's Air Quality Action Plan.

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10 Glossary

AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EPUK	Environmental Protection UK
Exceedence	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
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LDF	Local Development Framework
µg/m^3	Microgrammes per cubic metre
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
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
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal

11 Appendices

A1 Background Concentrations

A1.1.1 Background concentrations have been estimated based on data published by Defra (Defra, 2015b). These cover the whole country on a 1 km by 1 km grid and are published for each year from 2011 to 2030. The current maps have been verified against measurements undertaken during 2011.

A1.1.2 The background maps have been calibrated against measurements obtained from the CA7 Frognal Way diffusion tube monitoring site in 2013 (see **Figure 1**). The monitoring site is located within grid square 526500,185500. **Table A1** shows that the Defra maps slightly under-predict background nitrogen dioxide concentrations within the grid in 2013; therefore the background concentrations within the grid where the application site is located have been adjusted by the factor derived for nitrogen dioxide.

Table A1: Factor Used to Adjust Background NO_2 Concentrations

Monitoring Site	Annual Mean Background Concentration (µg/m^3)		Factor (Measured/Predicted)
	Measured	Predicted by Defra	
Diffusion Tube CA7	32.0	31.8	1.01

A2 Assessment of Significance

A2.1.1 There is no official guidance in the UK on how assess the significance of the effects of existing air quality pollutant sources on a new development. Environmental Protection UK (EPUK, 2010) has produced guidance on planning and air quality incorporating the approach to significance developed by the Institute of Air Quality Management (IAQM, 2009). The guidance is that the assessment of significance should be based on professional judgement, taking into account:

- where new exposure is being introduced into an existing area of poor air quality, the number of people exposed to levels above the objective;
- uncertainty, including the extent to which worst-case assumptions have been made; and
- the extent to which an objective or limit value is exceeded, e.g. an annual mean NO_2 of 41µg/m^3 should attract less significance than an annual mean of 51 µg/m^3.

A2.1.2 The overall significance of the air quality impacts have been described as insignificant, minor, moderate or major.

A2.1.3 A summary of the professional experience of the author of this assessment is provided in **Appendix A3**.

A3 Professional Experience

Bob Thomas, BSc (Hons) PgDip MSc MIEnvSc MIAQM CSci

Bob Thomas is a Director at AQA, with over seven years' experience in the field of air quality management and assessment. He has carried out air quality assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and PM_{10}, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. Bob has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers, architects and process operators, and has provided expert witness services at public inquiry. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

A full CV for Bob Thomas is available at http://aqassessments.co.uk/about