ED TOOVEY ARCHITECTS
UNIVERSITY COLLEGE SCHOOL SENIOR SCHOOL
PROJECT 200
LONDON BOROUGH OF CAMDEN

AIR QUALITY ASSESSMENT

DECEMBER 2023

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Ed Toovey Architects

University College School Senior School, Project 200

London Borough of Camden

Air Quality Assessment

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1 Introduction and Executive Summary

Introduction

1.1 Mayer Brown Limited has been instructed by Ed Toovey Architects on the behalf of the University College School to undertake an Air Quality Assessment (AQA) in support of a planning application for the redevelopment of the University College School Senior School, Frognal, Hampstead, London, NW3 6XH.

1.2 The following Air Quality Assessment (AQA) has been undertaken in order to assess any likely air quality impacts associated with the proposed development upon the surrounding area and to establish whether the site's location is considered suitable for the proposed use.

1.3 In the event that potential impacts are identified, specific mitigation measures will be recommended in order to minimise significant pollution impacts and help safeguard the health and wellbeing of any sensitive receptors within the local area.

1.4 The AQA is divided into the following sections:

- **Section 2** - Site Description and Proposals;
- **Section 3** - Legislation and Policy Content;
- **Section 4** - Assessment Methodology and Significance Criteria;
- **Section 5** - Baseline Conditions;
- **Section 6** - Evaluation of Potential Effects;
- **Section 7** - Mitigation Measures;
- **Section 8** – Conclusions;
- **Appendix A** - Proposed Site Layout; and
- **Appendix B** - Construction Dust Assessment.

Executive Summary

1.5 The closest, most representative monitoring locations to the site are below their annual mean objective in 2022.

1.6 A construction dust assessment has been undertaken for the four stages of construction activities associated with the proposed development. Additionally, the proposed development is not expected to generate any additional trips and proposes an all-electric energy strategy.

1.7 Therefore, the proposed development does not raise any significant or other residual adverse impacts on the health and/or quality of life for existing neighbours, as a result of any anticipated changes to air quality.

2 Site Description and Proposals

2.1 The site is located within the authoritative boundary of the London Borough of Camden (LBC) along Frognal.

2.2 The site location in relation to the local highway network can be seen in **Figure 2.1** below.

Figure 2.1: Site Location in Relation to the Local Highway Network

2.3 The UCS Frognal School site sits within a large urban block with residential properties to the north, east and south, and more residential buildings across the street on the west side.

2.4 The school lies on the east side of Frognal, Hampstead, with the 3 original listed School buildings addressing the street, behind a frontage of generous grassed areas and a line of semi-mature trees.

2.5 To the north the site is bound by a line of greenery and residential properties/gardens before reaching Frognal Way which is an informal private road.

2.6 The site is also bound by Frognal to the west, Arkwright Road and back gardens of private residences along Arkwright Road to the south and the back gardens of private residences along Ellerdale Road to the east.

2.7 The development site (red-line boundary) formerly comprised of the Giles Slaughter building [known as the "GS Wing"], Fives courts building, maintenance hut and 3 existing outdoor tennis courts at the south end of the overall school site (blue-line boundary). One of the existing outdoor tennis courts is located on the roof of the GS Wing.

2.8 The existing red-line and blue-line boundaries in relation to the immediate vicinity are illustrated in **Figure 2.2** below. The blue-line boundary shows the overall school site, whereas the red-line boundary shows the proposed development site.

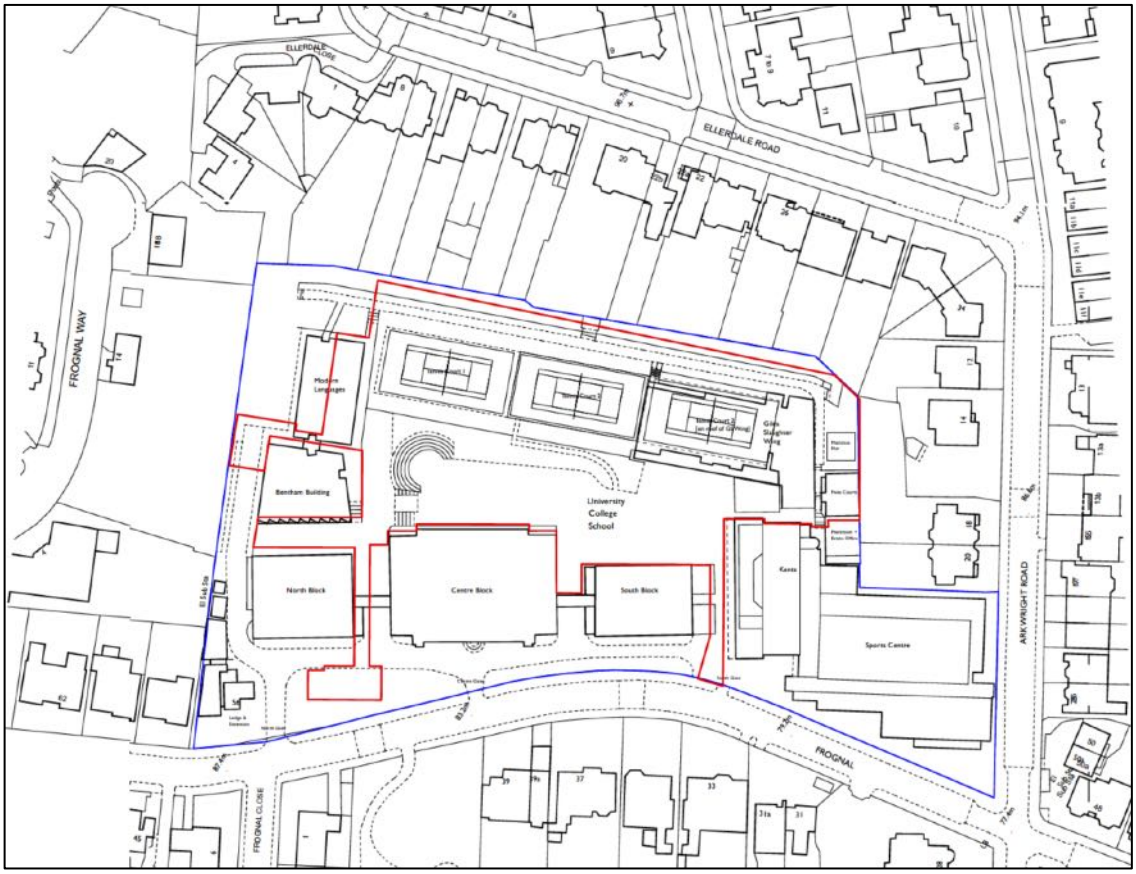

Figure 2.2: Existing Red-Line and Blue-Line Boundaries

2.9 The development proposals seek *"the improvement of existing School facilities. The full and partial demolition of existing buildings and three tennis courts are proposed to make way for a new part single and double storey building. The new building will provide educational facilities including dedicated space for music, drama, classrooms, catering space, medical facilities and ancillary accommodation. The tennis courts are to be replaced at roof level. The development includes extensions and enhancements to landscaping".*

2.10 The proposed site layout, floor plans and elevations are included in **Appendix A.**

3 Legislation and Policy Content

National Planning Policy

The Air Quality Strategy[1]

3.1 The Air Quality Strategy (AQS) fulfils the statutory requirement of the Environment Act 1995 as amended by the Environment Act 2021 to publish an Air Quality Strategy setting out air quality standards, objectives, and measures for improving ambient air quality every 5 years.

3.2 The revised strategy (2023) supersedes Volume 1 of the 2007 air quality strategy in England only. In Northern Ireland and Scotland, the strategy (Volume 1) remains in force.

3.3 The AQS sets out a framework to enable local authorities to deliver for their communities and contribute to the long-term air quality goals, including ambitious new targets for fine particulate matter ($PM_{2.5}$).

3.4 The AQS sets standards and objectives for pollutants to protect human health, vegetation and ecosystems. The pollutant objectives are the dates by which each standard is to be achieved, taking into account economic considerations, practical and technical feasibility.

3.5 Under the Environment Act 2021, 2 new legally-binding long-term targets have been set each with an interim target, in order to reduce concentrations of fine particulate matter, $PM_{2.5}$. The two new targets are:

- 10 µg/m^3 annual mean concentration $PM_{2.5}$ nationwide by 2040, with an interim target of 12 µg/m^3 by January 2028.
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

3.6 The new targets should help drive reductions in the worst $PM_{2.5}$ hotspots across the country, whilst ensuring nationwide action to improve air quality.

3.7 The main air quality pollutants of concern with regards to new developments such as the one proposed at this Application Site are the traffic related pollutants of Nitrogen Dioxide (NO_2) and Particulate Matter of size 10 and 2.5 microns (PM_{10} and $PM_{2.5}$).

3.8 The relevant air quality objectives, as they currently apply in the United Kingdom are presented in **Table 3.1** below.

[1] Department for Environment, Food & Rural Affairs (DEFRA), (2023), 'Air Quality Strategy: framework for local authority delivery. Available on: Air quality strategy: framework for local authority delivery - GOV.UK (www.gov.uk)

Pollutant	Air Quality Objectives		Date to be achieved by (and maintained thereafter)
	Concentration	Measured As	
Nitrogen Dioxide (NO_2)	200 µg/m^3	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg/m^3	Annual mean	31/12/2005
Particles (PM_{10})	50 µg/m^3	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40 µg/m^3	Annual mean	31/12/2004
Particles ($PM_{2.5}$) (UK – Except Scotland)	20 µg/m^3	Annual mean	2020
Particles ($PM_{2.5}$) (UK – Urban Areas)	Target of 15% reduction in concentrations at urban background		Between 2010 and 2020
Particles ($PM_{2.5}$) (England)	12 µg/m^3	Interim annual mean target to be achieved by 2028	2028*
	Target of 22% reduction in average population exposure		
	10 µg/m^3	Legally binding nationwide annual mean target to be achieved by 2040	2040**
	Target of 35% reduction in average population exposure		

*Note: Interim $PM_{2.5}$ targets are to be achieved by 2028

**Note: Legally binding $PM_{2.5}$ targets are to be achieved by 2040

Table 3.1: Air Quality Objectives in the UK

Air Quality Standards Regulations, 2010[2]

3.9 The air quality limit values set out in EU Directive (2008/50/EC, 2008) are transposed in English law by the Air Quality Standards Regulations (2010). This imposes duties on the Secretary of State relating to achieving the limit values.

3.10 With regards to dust, it is recognised that major construction works may give rise to dust emissions within the PM_{10} and $PM_{2.5}$ size fraction and it is noted within section 79 of the Environmental Protection Act 1990 that a statutory nuisance is defined as:

"…b - smoke emitted from premises so as to be prejudicial to health or a nuisance;

c - fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;

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

2 UK Parliament, (2010). 'The Air Quality Standards Regulations 2010', SI 2010/1001. HMSO, London.

National Planning Policy Framework (NPPF) 2023[3]

3.11 The NPPF was updated in September 2023 and supersedes all the previous versions including the recently revised 2021 version. The purpose of the document is to set out the Government's policies in relation to planning for England and how these should be applied.

3.12 The 2023 NPPF has an overall environmental objective which aims "*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*.".

3.13 Section 9 of the NPPF refers to promoting sustainable transport. In relation to air quality, paragraph 104 states that:

"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:...

c) opportunities to promote walking, cycling and public transport use are identified and pursued;

d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains…".

3.14 Additionally, paragraph 105 states:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health…".

[3] Ministry of Housing, Communities and Local Government, (2023), 'National Planning Policy Framework', London.

3.15 Section 15 (conserving and enhancing the natural environment) of the document also refers to air quality within planning. Paragraph 174 states;

"Planning policies and decisions should contribute to and enhance the natural and local environment by:…

e) 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;…".

3.16 Paragraph 177 states;

"When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development60 other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:…

c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.".

3.17 Furthermore, under section 15 in reference to ground conditions and pollution paragraph 185 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…".

3.18 Paragraph 186 adds that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement … Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.".

3.19 Additionally, the 2023 NPPF highlights a presumption in favour of sustainable development. Paragraph 11 states;

"Plans and decisions should apply a presumption in favour of sustainable development. For plan-making this means that:

a) all plans should promote a sustainable pattern of development that seeks to: meet the development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects;…".

3.20 In relation to the planning conditions and obligations, paragraphs, 55 and 56 state the following:

"Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.

Planning conditions should be kept to a minimum and only imposed where they are necessary, relevant to planning and to the development to be permitted, enforceable, precise and reasonable in all other respects. Agreeing conditions early is beneficial to all parties involved in the process and can speed up decision making. Conditions that are required to be discharged before development commences should be avoided, unless there is a clear justification.".

Planning Practice Guidance – Air Quality[4]

3.21 The Planning Practice Guidance (PPG) is used to support the National Planning Policy Framework and is published online. The guidance on air quality was originally published in 2014 and updated in November 2019. The PPG provides various principles on how planning can take account of the impact of new development on air quality.

[4] Ministry of Housing, Communities and Local Government, (2019), 'Planning Practice Guidance-Air Quality', Ministry of Housing, Communities and Local Government, London. Available on: https://www.gov.uk/guidance/air-quality--3#history

3.22 The guidance refers to the specific issues that may need to be considered when assessing air quality impacts. It states:

"Considerations that may be relevant to determining a planning application include whether the development would:

- *Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield…*
- *Introduce new point sources of air pollution…*
- *Expose people to harmful concentrations of air pollutants…*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity…".*

3.23 Guidance on how detailed an air quality assessment need to be is provided and states:

"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…".

3.24 Reference to how air quality can be mitigated states that:

"Mitigation option will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with the applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented…".

Regional Planning Policy

The London Plan 2021[5]

3.25 The London Plan 2021 is the Spatial Development Strategy for Greater London. Under the legislation establishing the Greater London Authority (GLA), the Mayor is required to publish a Spatial Development Strategy (SDS) and keep it under review.

[5] Greater London Authority (GLA), (2021), 'The London Plan', GLA, London

3.26 In Chapter 1 Planning London's Future - Good Growth, GG3: Creating a Healthy city, relates to air quality and states:

"To improve Londoners' health and reduce health inequalities, those involved in planning and development must:…

F. seek to improve London's air quality, reduce public exposure to poor air quality and minimise inequalities in levels of exposure to air pollution …".

3.27 Policy D1: London's form, character and capacity for growth requires:

"Boroughs should undertake area assessments to define the characteristics, qualities and value of different places within the plan area to develop an understanding of different areas' capacity for growth. Area assessments should cover the elements listed below:…

"5) air quality and noise levels…".

3.28 Policy D3: Optimising site capacity through the design-led approach refers to air quality and requires that:

"…Development proposals should:…

9) help prevent or mitigate the impacts of noise and poor air quality…".

3.29 Paragraph 3.3.9 adds:

"Measures to design out exposure to poor air quality and noise from both external and internal sources, should be integral to development proposals and be considered early in the design process. Characteristics that increase pollutant or noise levels, such as poorly-located emission sources, street canyons and noise sources should also be designed out wherever possible. Optimising site layout and building design can also reduce the risk of overheating as well as minimising carbon emissions by reducing energy demand.".

3.30 Chapter 9 of the documents refers to Policy SI1: Improving air quality, which states:

*"**A.** Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and delivery further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.*

***B.** To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:*

1. Development proposals should not:

a) *lead to further deterioration of existing poor air quality,*

b) *create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits,*

c) *create unacceptable risk of high levels of exposure to poor air quality.*

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

a) Development proposals must be at least air quality neutral,

b) Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures,

c) Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1,

d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people, should demonstrate that design measures have been used to minimise exposure.

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

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

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

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

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

3.31 Paragraph 9.1.1 adds:

"Poor air quality is a major issue for London which is failing to meet requirements under legislation. Poor air quality has direct impacts on the health, quality of life and life expectancy of Londoners. The impacts tend to be most heavily felt in some of London's most deprived neighbourhoods, and by people who are most vulnerable to the impacts such as children and older people. London's air quality should be significantly improved and exposure to poor air quality, especially for vulnerable people, should be reduced.".

3.32 Paragraph 9.1.15 confirms that:

"Where the Air Quality Assessment or the air quality positive approach assumes that specific measures are put in place to improve air quality, prevent or mitigate air quality impacts, these should be secured through the use of planning conditions or s106 agreements. For instance, if ultra-low NOx boilers are assumed in the assessment, conditions should require the provision of details of the installed plant prior to the occupation of the building, or where larger plant is used for heating, post installation emissions tests should be required to ensure that the modelled emission parameters are achieved."

3.33 Under Chapter 10 – Transport, paragraph 10.4.3 refers to air quality and states:

"It is important that development proposals reduce the negative impact of development on the transport network and reduce potentially harmful public health impacts. The biggest transport-related impact of development on public health in London is the extent to which it enables physical activity from walking, cycling and using public transport. The other main impacts on public health relate to air quality…".

London Environment Strategy, May 2018[6]

3.34 Changes made by the Localism Act 2011 brought in a requirement for the original six separate environmental strategies to be brought together into a single London Environment Strategy ("the strategy") under section 351A of the Greater London Authority Act 1999. This included The Mayer's Air Quality Strategy – Cleaning the Air, 2010.

[6] Greater London Authority (GLA), (2018), 'London Environment Strategy', GLA, London

3.35 The London Environment Strategy sets out an ambitious vision for improving London's environment for the benefit of all Londoners. This strategy sets out a vision for London in 2050, that will realise the potential of London's environment to support good health and quality of life and to make the city a better place to live, work and do business. The Mayor wants London to be the world's greenest global city. This will mean making it: Greener, cleaner and ready for the future.

3.36 The London Environment Strategy sets out bold policies and proposals in seven policy areas, to make this vision a reality. The key aims for London are:

- "*for London to have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities;*
- *for London to be the world's first National Park City, where more than half of its area is green, where the natural environment is protected, and where the network of green infrastructure is managed to benefit all Londoners;*
- *for London to be a zero carbon city by 2050, with energy efficient buildings, clean transport and clean energy;*
- *to make London a zero waste city. By 2026 no biodegradable or recyclable waste will be sent to landfill, and by 2030 65 per cent of London's municipal waste will be recycled;*
- *for London and Londoners to be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought;*
- *for Londoners' quality of life to be improved by reducing the number of people adversely affected by noise and promoting more quiet and tranquil spaces; and*
- *for London to transition to a low carbon circular economy".*

3.37 Chapter 4: Air Quality has the following aim:

"*London will have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities.*".

3.38 Objective 4.1 adds:

"Support and empower London and its communities, particularly the most disadvantages and those in priority locations, to reduce their exposure to poor air quality.".

3.39 Policy 4.1.1 states:

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

3.40 Policy 4.1.2 stated the following:

"*Improve the understanding of air quality health impacts to better target policies and action*".

3.41 Objective 4.2 adds:

"Achieve legal compliance with UK and EU Limits as soon as possible, including by mobilising action from London Boroughs, Government and other partners".

3.42 Policy 4.2.1 refers to reducing emissions and switching to more sustainable travel. It states:

"*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".*

3.43 Policy 4.2.2 adds:

"Reduce emissions from non-road transport sources, including by phasing out fossil fuels".

3.44 Policy 4.2.3 states:

"Reduce emissions from non-transport sources, including by phasing out fossil fuels".

3.45 Policy 4.2.4 states:

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

3.46 Policy 4.3.1 and 4.3.2 refer to meeting World Health Organization (WHO) air quality guidelines, establishing new targets for pollutants and zero emission transport. They state:

"*The Mayor will establish new targets for $PM_{2.5}$ and other pollutants where needed. The Mayor will seek to meet these targets as soon as possible, working with government and other partners…*

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

3.47 Policy 4.3.3 states:

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

3.48 Policy 4.3.4 states:

"*Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces"*.

Local Planning Policy

Camden Local Plan 2017[7]

3.49 The Local Plan (2017) is the Council's main planning document which provides the framework for managing development in the borough. It sets out policies which guide planning decisions. The Local Plan 2017 has replaced the Core Strategy and Camden Development Policies documents.

3.50 Air Quality is discussed in Policy CC4 – Air Quality which states:

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

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

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.

Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.".

[7] London Borough of Camden (LBC), (2017), 'Camden Local Plan', LBC. Available at: https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6

Redington Frognal Neighbourhood Plan; Adopted Version – September 2021[8]

3.51 The London Borough of Camden Council formally adopted the Redington Frognal Neighbourhood Plan in September 2021. The neighbourhood plan was written to ensure that the development within the Redington Frognal Conservation Area is sustainable, preserves/enhances the character/appearance and to meet the following basic conditions;

- *"having regard to national planning policy and guidance,*
- *being in general conformity with strategic policies (Camden Local Plan, adopted on 3 July 2017),*
- *helping to achieve sustainable development*
- *not breaching EU obligations or human rights law."*

3.52 Air Quality and air quality improvements were considered within SD3 Electric Vehicle Charging Points, BGI 1 Biodiversity and Green Infrastructure and BGI 2 Tree Planting and Preservation.

3.53 This air quality assessment has taken into consideration all the above policies and guidelines.

[8] London Borough of Camden (LBC), (2021), 'Redington Frognal Neighbourhood Plan Adoption Version – September 2021', LBC. Available at: https://www.camden.gov.uk/documents/20142/7661411/RedFrog+NP-+Adoption+Version+September+2021.pdf/1e6a3910-9480-97a9-3f4d-671bfe0190f5?t=1632489655621

4 Assessment Methodology and Significance Criteria

4.1 This section outlines the assessment methodology and the criteria that have been used to assess the significance of risk associated with the proposed development.

4.2 **Table 4.1** below summarises the key information sources used in this assessment.

Source	Details
Department for Environment, Food and Rural Affairs (Defra)	**COVID-19 Supplementary Guidance - Local Air Quality Reporting in 2021**[9] Prepared in order to inform local authorities in England of the key changes and points of reference with respect to LAQM duties, as described in Part IV of the Environment Act 1995, for the 2021 reporting year.
	The Local Air Quality Management (LAQM)Tools.[10] Contain information pertaining to monitoring networks across the UK and provides tools, which aid in the data processing and the estimation of pollutant concentrations with reference to the specific year of study.
	LAQM Background Maps (2018 Reference Year)[11] These provide mapped estimates of background concentrations for specific pollutants (NO_x, NO_2, PM_{10} and $PM_{2.5}$) using a 1x1 km grid. The maps also provide information on how pollutant concentrations change over time or across a wide area, while allowing for the assessment of new pollutant sources that are introduced into an area and the impact they may have upon local air quality.
	The Emissions Factors Toolkit (EFT) – version11.0[12] The EFT allows users to calculate road vehicle pollutant emission rates for NOx, PM_{10}, $PM_{2.5}$ and CO_2 for a specified year, road type, vehicle speed and vehicle fleet composition.
Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM)	**Land-Use Planning & Development Control: Planning for Air Quality (2017)**[13] This document provides advice and guidance to ensure that air quality is adequately considered in the land-use planning and development control processes. This is particularly applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments, especially those within urban areas where air quality is poorer.
	Guidance on the assessment of dust from demolition and construction (2014 v.1.1)[14] The document provides guidance on how to undertake a construction impact assessment (including demolition and earthworks). The emphasis in the document is on providing the means for classifying the risk of dust impacts from a construction site, which then allows appropriate mitigation measures to be identified.
London Atmospheric Emissions Inventory (LAEI)	**The LAEI**[15] provides emissions estimates for key pollutants and the vehicle fleet composition for the base year (2019) only.

[9] Greater London Authority (GLA). (2021). 'Local Air Quality Management Reporting in 2021 COVID-19 Supplementary Guidance'. GLA, London
[10] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/list-of-available-tools/
[11] Department of Environment, Food and Rural Affairs (DEFRA). (2018), 'Background Mapping data for local authorities – 2018', DEFRA, London. https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018
[12] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/
[13] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London
[14] IAQM, (2014). 'Guidance on the assessment of dust from demolition and construction', IAQM, London.
[15] London Atmospheric Emissions Inventory (2019) Available from: https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2019

Source	Details
	These emissions have been used to estimate ground level concentrations of key pollutants NOx, NO_2, PM_{10} and $PM_{2.5}$ across Greater London for year 2019, using an atmospheric dispersion model. Air pollutant concentration maps and associated datasets. The area covered by the LAEI includes Greater London (the 32 London boroughs and the City of London), as well as areas outside Greater London up to the M25 motorway.
Greater London Authority (GLA)	**London Local Air Quality Management (LLAQM)- Technical Guidance 2019 (LLAQM.TG (19))[16]** This technical guidance has been prepared by the Greater London Authority (GLA) to support London boroughs in carrying out their duties under the Environment Act 1995 and connected regulations. It applies only to London's 32 boroughs (and the City of London).
	GLA's The Control of Dust and Emissions During Construction and Demolition - Supplementary Planning Guidance[17] This SPG provides guidance on the then adopted London Plan (2016) policy 7.14, as well as a range of other policies that deal with environmental sustainability, health and quality of life.
	Non-Road Mobile Machinery (NRMM) – 'Low Emissions Zone (LEZ)' [18] The NRMM Low Emission Zone uses the Mayor and London Borough's planning powers to control emissions from NRMM used on construction sites. NRMM regulations apply to all major developments, within London and requires that all engines with a power rating between 37 kW and 560 kW meet an emission standard based on the engine emission "stage".
	Non-Road Mobile Machinery (NRMM) – Practical Guide v.5.[19] This document provides guidance on the London NRMM Low Emission Zone (LEZ), including the processes and procedures that must be in place on all development sites to comply with the policy. It also signposts future changes to the policy.
	London Plan Guidance - Air Quality Neutral (2023)[20]. This report has been commissioned by the GLA to provide support to the development of the Mayor's London Plan 2021 Policy SI 1 Improving Air Quality to ensure that "development proposals must be at least Air Quality Neutral". It provides guidance on the application of the "air quality neutral" policy, methodology and calculations to complete either a simple or full procedure for an Air Quality Neutral Assessment. If a development is not Air Quality Neutral this document also provides guidance on mitigation measures and offsetting payments methodologies, where required.
	Air Quality Neutral: Update to Benchmarks (2020)[21] This report provides an update to the Air Quality Neutral benchmarks in light of the most up-to-date evidence and provides further clarification on how to apply the benchmarks to support planning applications.

[16] Greater London Authority (GLA), (2019), 'London Local Air Quality Management (LLAQM) Technical Guidance 2019 (LLAQM.TG (19))', GLA, London.
[17] Mayor of London (2014). 'The Control of Dust and Emissions During Construction and Demolition-Supplementary Planning Guidance (SPG)'. Greater London Authority (GLA). London.
[18] Available here: Non-Road Mobile Machinery (NRMM) | London City Hall
[19] Cleaner Construction For London, supported by Mayor of London (2022). Non-Road Mobile Machinery (NRMM) Practical Guide v.5. London
[20] Greater London Authority (GLA), (2023). 'London Plan Guidance - Air Quality Neutral'. GLA. London
[21] Air Quality Consultants (AQC) & ENVIRON UK Ltd, (2020). 'Air Quality Neutral: Update to Benchmarks. AQC. Bristol

Source	Details
London Councils	**Air Quality and Planning Guidance[22].** This guidance is aimed at local authorities, developers and their consultants, and provides technical advice on how to deal with planning applications that could have an impact on air quality.
Local Authority	**London Borough of Camden ASR**[23] This Annual Status Report (ASR) highlights the status of the air quality within the Borough, discussing AQMAs, the monitoring strategy and concentrations of pollutants in the air.
	Camden Planning Guidance – Air Quality 2021[24] This planning guidance outlines the air quality in Camden, how to assess air quality impacts, how to minimise emissions into the air and conditions/legal agreements.
	Camden Clean Air Action Plan 2023-2026[25] This Air Quality Action Plan sets out strategic objectives for the borough and aims to improve air quality and public health as a result of the air they breathe.

Table 4.1: Key Information Sources

Scope of Air Quality Assessment

4.3 The following document assesses the suitability of the site for the proposed use and whether any significant air quality impacts are expected as a result of the construction and operation of the proposed development.

4.4 A staged assessment approach has been adopted. This ensures that the approach taken for the assessment of risk is proportional to the risk of an unacceptable impact being caused. Where a simple review of the likely impacts associated with the proposed development shows that the risk of a health/annoyance impact is negligible, this will be sufficient to conclude that no further assessment is necessary.

4.5 In cases where the risk involved cannot be regarded as insignificant, a more detailed and quantitative assessment has been undertaken.

4.6 The specific methodology used in this assessment is presented below.

[22] London Councils. (2007), Air Quality and Planning Guidance, The London Air Pollution Planning and the Local Environment (APPLE) working group, London
[23] London Borough of Camden, (2022). 'London Borough of Camden Air Quality Annual Status Report for 2021'. (LBC)
[24] London Borough of Camden (LBC), (2021), 'Camden Planning Guidance – Air Quality – January 2021', LBC. Available at: https://www.camden.gov.uk/documents/20142/4823269/Air+Quality+CPG+Jan+2021.pdf/4d9138c0-6ed0-c1be-ce68-a9ebf61e8477?t=1611580574285
[25] London Borough of Camden (LBC), (2023), 'Camden Clean Air Action Plan 2023-2026', LBC.

Construction Dust Impacts

4.7 In February 2014, The Institute of Air Quality Management (IAQM) published a guidance on how to access and mitigate the impacts the dust emissions from demolition and construction sites. The guidance was updated in June 2016 (Version 1.1) and supersedes the 2012 IAQM guidance on the assessment of the impacts of construction on air quality and the determination of their significance. This approach is broadly replicated within the Greater London Authority (GLA) construction dust document (2014) and provides detail for a clear and concise construction dust assessment (CDA).

4.8 Potential dust impacts associated with construction activities have been assessed in accordance with guidance from the IAQM and the GLA best practice documents. The IAQM provides guidance on a five-step process to assess the potential impacts of construction dust pre-mitigation, provide mitigation measures specific to the risk and assess the post-mitigation impacts.

4.9 The assessment procedure follows the following framework:

- Screen the requirement for a more detailed assessment;
- Assess the risk of dust impacts of the four phases of construction (demolition, earthworks, construction and trackout), taking into account:
  - the scale and nature of the works, which determines the potential Dust Emission Magnitude; and
  - the sensitivity of the area.
- Determine the site-specific mitigation for the potential activities;
- Examine the residual effects and determine whether or not these are significant; and
- Prepare the Construction Dust Assessment.

4.10 In the process of screening the need for a detailed assessment, the following criteria has been used:

"An assessment will normally be required where there is:

- a 'human receptor' within:
  - *350m of the boundary of the site; or*
  - *50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).*
- an 'ecological receptor' within:
  - *50m of the boundary of the site; or*
  - *50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s)."*

4.11 When defining the sensitivity of an area/receptor, the factors within **Table 4.2** below are used.

Area Sensitivity	Human Receptors	Ecological Receptors
High	People would be present continuously, 10-100 dwellings within 20m of the site, exposed over a time period relevant to the air quality objective for PM_{10}, very sensitive receptors (e.g. residential properties, hospitals, schools, care homes).	International or national designation, locations where there is a community of a particularly dust sensitive species (e.g. Special Area of Conservation SAC).
Medium	People would not be expected to be present here continously for extended periods, locations where people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10}, 1-10 dwellings within 20m of the site, medium sensitive receptors (e.g. parks, place of work-office and shop workers).	Locations where there is particularly important plant species, national designation where the features may be affected by dust deposition (e.g. Sites of Special Scientific Interest SSSI).
Low	People would be expeceted to be present only for limited periods, human exposure is transient. 1 dwelling within 20m of site. Annual mean concentrations well below the national objectives (<28µg/m^3). Low sensitivity receptors (e.g. public footpaths, playing fields, shopping streets).	Locations with a local designation where the features may be affected by dust deposition (e.g. Local Nature Reserve).

Table 4.2: IAQM Factors for Defining the Sensitivity of an Area/Receptor.

4.12 A revised version of this guidance is currently being prepared by IAQM. However, this had not yet been adopted/published at the time of writing.

Building Emissions

4.13 Any emissions associated with the proposed energy strategy have been assessed in line with the recommendations provided by Max Fordham LLP.

Traffic Emissions

4.14 The EPUK & IAQM Guidance – 'Planning For Air Quality' has been used to assess potential traffic impacts associated with the proposed development.

4.15 **Table 4.3** below provides the criteria used for screening the need for an Air Quality Assessment.

The Development Will:	Indicative Criteria to proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
Realign roads, i.e. changing the proximity of receptors to traffic lanes	Where the change is 5m or more and the road is within an AQMA.
Introduce a new junction or remove an existing junction near to relevant receptors	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
Introduce or change a bus station	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere
Have an underground car park with extraction system	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
Note – Where distances from the road are presented, they are from the edge of the nearest carriageway to the nearest relevant receptor, taking account of vertical and horizontal dimensions. Where traffic flows are presented they are Annual Average Daily Traffic (AADT) in vehicles per day (vpd). Where HDV flows are specified, they include lorries and buses. Where LDV's are specified they include cars and vans (with a gross vehicle weight ≤ 3.5 tonnes).	

Table 4.3: EPUK & IAQM Indicative Criteria for Proceeding to an Air Quality Assessment

4.16 If any of the above criteria in **Table 4.3** are met, then the significance of air pollution impacts must be assessed. This may be either a Simple or a Detailed Assessment. In accordance with the EPUK and IAQM guidance, a Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that must be completed with the aid of a dispersion model.

Air Quality Neutral Assessment

4.17 In February 2023 the Greater London Authority published the 'London Plan Guidance Air Quality Neutral' document which describes the method of calculating the NOx and/or PM_{10} emissions from the building and transport elements of the proposed development. These emissions are then compared to Building Emission Benchmarks (BEBs) and/or Transport Emission Benchmarks (TEBs).

4.18 London's air quality problems are primarily a result of a very large number of sources each contributing a small amount. In light of these issues, both the London Plan 2021 and the 2018 London Environment Strategy make reference to new developments being "air quality neutral".

4.19 The new London Plan (2021) Policy SI 1 Improving Air Quality states that;

"…2) In order to meet the requirements in Part 1, as a minimum:
a) development proposals must be at least Air Quality Neutral… ".

4.20 An Air Quality Neutral Assessment is required to be incorporated into the Air Quality Assessment, to calculate the building and transport emissions associated with the proposed development and compare these values to the relevant benchmarks.

4.21 There is a Simplified Procedure for BEB's and TEB's of minor developments. A minor development includes;

- *"dwellings, where the number of dwellings to be constructed is between one and nine inclusive;*
- *a site area of less than 0.5 hectares for the construction of dwellings where the number of dwellings to be constructed is not given in the application;*
- *a development where the floor space to be built is less than 1,000 m2 floor area or where the site area is less than one hectare (non-dwellings)".*

4.22 If the above criteria is not met then a Full Procedure is required. Developments that are shown to not meet the emission benchmarks for buildings or transport (considered separately), then further review and discussions might be required in order to consider suitable mitigation and/or the off-setting measures.

Impact Criteria

4.23 In the event that the initial screening of proposed traffic flows indicates that there is a potential risk of impact, guidance is provided by the IAQM and EPUK on how to determine the magnitude and significance of any likely changes in air pollutant concentrations and/or exposure as a result of a proposed development.

4.24 This process takes the following into account:

- the magnitude of the change (% change of annual mean concentration);
- the concentration relative to the AQS objective (above or below the objective); and
- the direction of change (adverse or beneficial).

4.25 The magnitude of an impact should be described by using the EPUK criteria set out in **Table 4.4** below. The criteria are based upon the change in concentration resulting from the proposed development as a percentage of the Air Quality Action Level (AQAL) which in this case is NO_2 and PM_{10} annual mean objective levels of 40 µg/m^3.

Change Magnitude	NO_2/PM_{10} Annual Mean	No Days PM_{10} >40 µg/m^3
Large	Increase/decrease >10% (>4 µg/m^3)	Increase/decrease >4 days
Medium	Increase/decrease 6-10% (2.4-4 µg/m^3)	Increase/decrease 2-4 days
Small	Increase/decrease 2-5% (0.8-2 µg/m^3)	Increase/decrease 1-2 days
Imperceptible	Increase/decrease <1% (<0.4 µg/m^3)	Increase/decrease <1 day

Table 4.4: Impact Magnitude for Changes in NO_2 and PM_{10} Concentrations

4.26 The significance of the impact will be dependent upon the magnitude of change in relation to the relevant Air Quality Action Level (AQAL). This is set out in **Table 4.5** below.

Long term average Concentration at receptor in assessment year.	% Change in concentration relative to Air Quality Action Level (AQAL)			
	1	2-5	6-10	>10
75% of less of AQAL (<30 µg/m^3)	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL (30-38 µg/m^3)	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL (38-41 µg/m^3)	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL (41 - 44 µg/m^3)	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL (>44 µg/m^3)	Moderate	Substantial	Substantial	Substantial

Table 4.5: Impact Descriptors for Individual Receptors

4.27 Therefore, once the magnitude and the significance of the change has been established, the impact at each relevant receptor can be described. The impact magnitude at each receptor location can be described using the changes stated above as of Large, Medium, Small or Imperceptible magnitude and of Negligible, Slight, Moderate or Substantial significance and also as being either Temporary or Permanent.

4.28 The overall significance should be described separately for both the impact of emissions related to the proposed development on existing receptors, and for the impacts of emissions from existing source(s) on new receptors being introduced from the proposed development. This is discussed below.

Exposure Criteria

4.29 The London Councils Air Quality and Planning Guidance takes into account the now superseded Planning Policy Statement 23: Planning and Pollution Control and is aimed at developers, their consultants and local authorities in order to ensure consistency in the approach to dealing with Air Quality and planning in London.

4.30 When determining both the significance of exposure to air pollution and the levels of mitigation required, consideration should be given to the following Air Pollution Exposure Criteria (APEC) specified within the London Councils Air Quality and Planning Guidance[26]. The APEC criteria is set out in **Table 4.6** below.

	Applicable Range Nitrogen Dioxide Annual Mean	Applicable Range PM_{10}	Recommendation
APEC – A	> 5% below national objective	**Annual Mean:** > 5% below national objective **24 hr:** > 1-day less than national objective	No air quality grounds for refusal; however mitigation of any emissions should be considered.
APEC – B	Between 5% below or above national objective	**Annual Mean:** Between 5% above or below national objective **24 hr:** Between 1-day above or below national objective.	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., Maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered and internal pollutant emissions minimised.
APEC – C	> 5% above national objective	**Annual Mean:** > 5% above national objective **24 hr:** > 1-day more than national objective.	Refusal on air quality grounds should be anticipated, unless the Local Authority has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures.

Table 4.6: Air Pollution Exposure Criteria

[26] London Councils. (2007) 'Air Quality and Planning Guidance', The London Air Pollution Planning and the Local Environment (APPLE) working group, London

4.31 It should be noted that air quality is not well suited to the rigid application of a generic significance matrix to determine the overall significance of a development and individual receptor sensitivity should also be taken into account. Therefore, professional judgement should be employed throughout, and the assessment should take into account site specific considerations.

4.32 Both the impact and exposure criteria will be applied to the findings of this assessment, where required.

5 Baseline Conditions

Local Air Quality Management

5.1 The proposed development site falls within the jurisdiction of London Borough of Camden (LBC).

5.2 Under the Air Quality Strategy, there is a duty on all Local Authorities to consider the air quality within their boundaries and prepare an annual update report.

5.3 A review of the Air Quality Assessments undertaken by LBC has indicated that one Air Quality Management Area (AQMA) has been declared which encompasses the entirety of the Borough.

5.4 LBC AQMA (Camden AQMA) was declared in 2002 as a result of exceedances to the annual mean objective for Nitrogen Dioxide (NO_2) and 24-hour mean objective for Particulate Material (PM_{10}). Therefore, the proposed development site lies with the boundary LBC AQMA.

5.5 The site boarders an Air Quality Focus Area (AQFA) called 'Swiss Cottage from South Hamstead to Finchley Road Station'. Additionally, there are two other AQFA within 1.5km from the site; 'Cricklewood A41 Hendon Way' and 'Kilburn Town Centre'.

5.6 Finally, there is one ecological designated site within 1.5km of the site boundary, a Site of Special Scientific Interest (SSSI) called 'Hampstead Heath Woods'. However, due to this SSSI being located >50m of the boundary of the site and >50m of the routes used by construction vehicles on the public highway (up to 500m from the site entrance), Hampstead Health Woods has not been considered within the Construction Dust Assessment (CDA) in **Appendix B**.

5.7 The site location in relation to the Camden AQMA and closest AQFAs and SSSI is shown in **Figure 5.1** below.

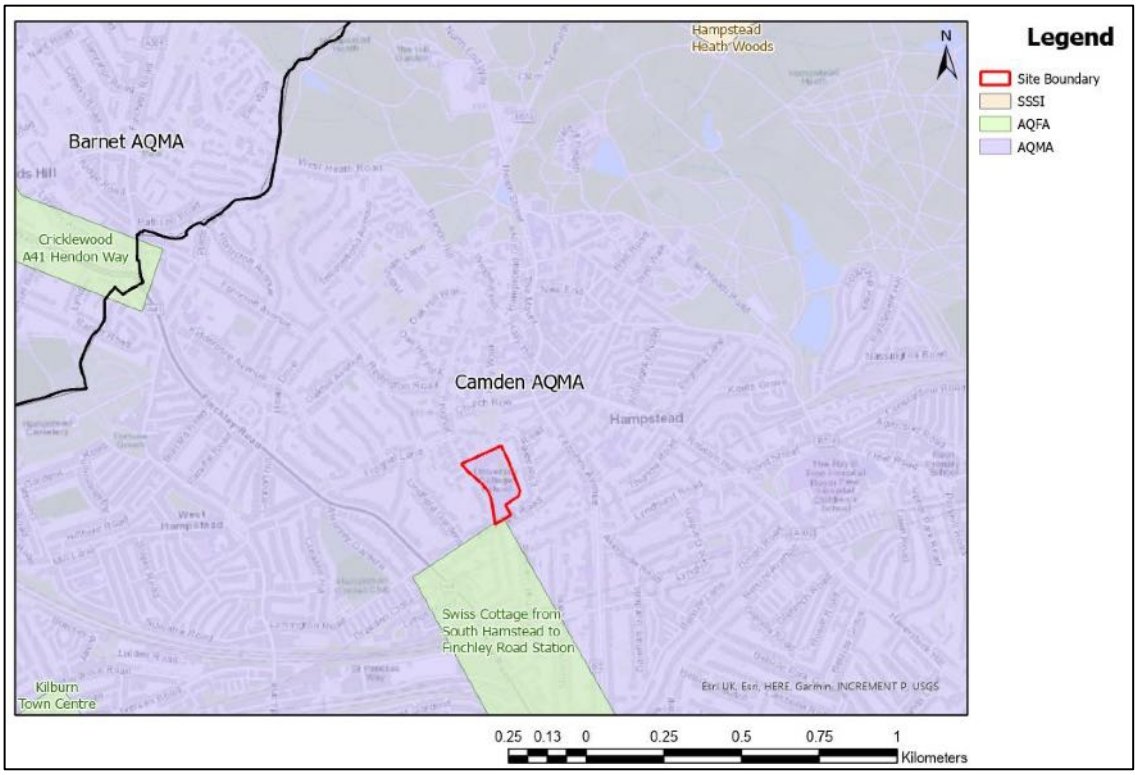

Figure 5.1: Site Location in Relation to the Camden AQMA and closest AQFAs and SSSI

5.8 Additionally, the London Borough of Camden Policy Maps has identified that the site also lies within the Redington Frognal Conservation Area which was declared in 1985. The site location in relation to the Conservation Area is shown in **Figure 5.2** below.

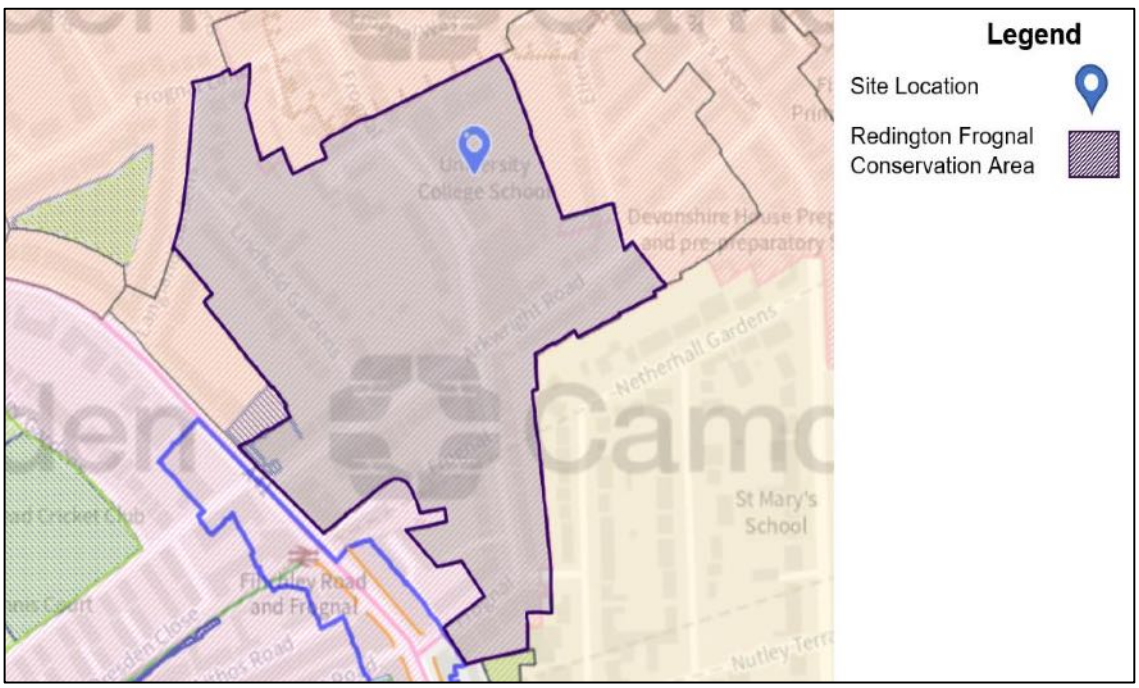

Figure 5.2: Site Location in Relation to the Redington Frognal Conservation Area

Background

5.9 The Defra mapping tool (reference year 2018) has been used to establish the pollutant background concentration within the corresponding 1x1km grid square that the site is located in (X:526500; Y:185500).

5.10 The NOx, NO_2, PM_{10} and $PM_{2.5}$ annual mean background concentrations for 2022 are provided in **Table 5.1** below.

Pollutant	2022 (µg/m^3)
NOx	34.88
NO_2	23.33
PM_{10}	16.95
$PM_{2.5}$	11.10

Table 5.1: DEFRA Background Annual Mean Concentrations in 2022

Local Monitoring

5.11 In August 2023, LBC published their 2022 Air Quality Annual Status Report (ASR) which provides their latest monitoring data within the Borough.

5.12 Monitored results from 2020 and 2021 are likely to have been impacted by the COVID-19 pandemic and are likely to be less representative of the 'true' baseline concentrations. Therefore, in line with the Covid-19 Supplementary Guidance produced by DEFRA and the GLA in 2021, the data from 2020 and 2021 has not been used as reference years within this baseline. Subsequently, this assessment has used 2022 data as the best representative refence year of post-COVID baseline concentrations.

Automatic Monitoring

5.13 LBC currently operates five automatic monitoring locations. The site location in relation to the automatic monitoring stations is illustrated in **Figure 5.3** below.

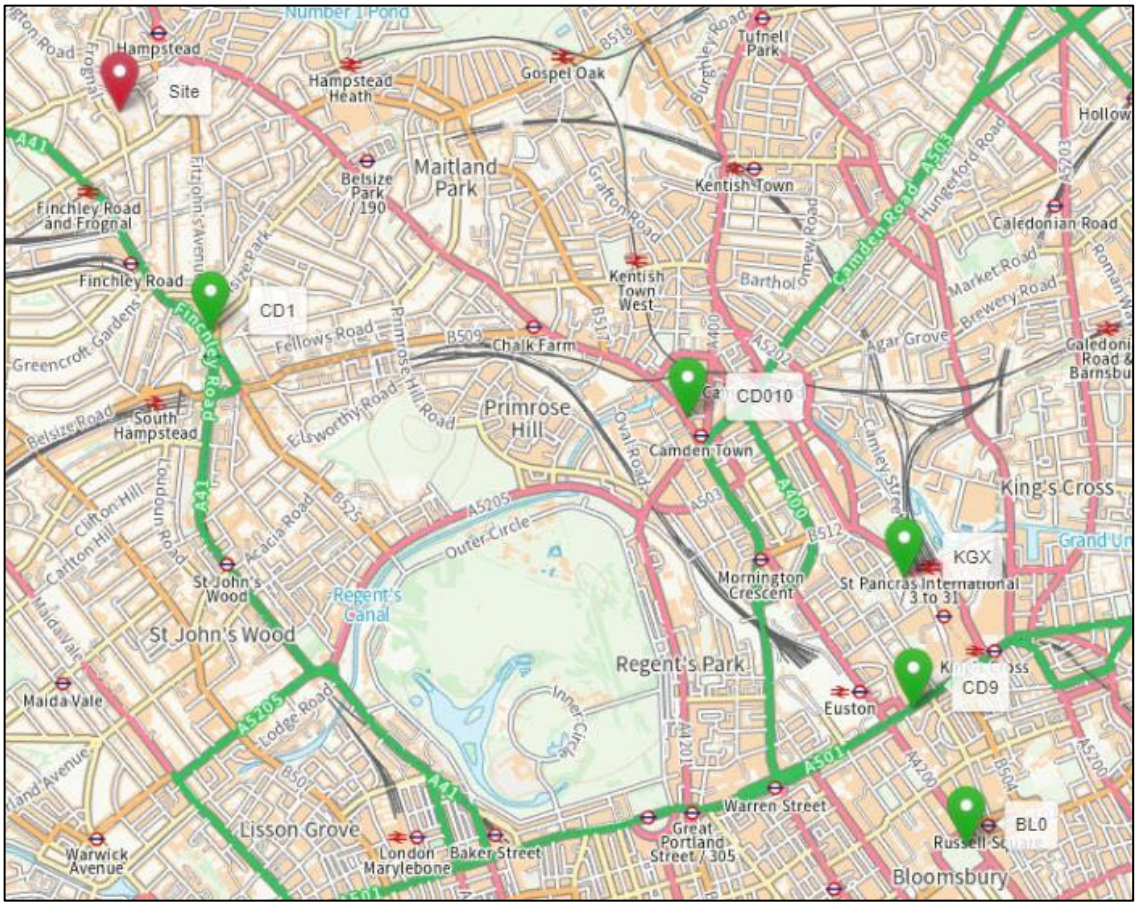

Figure 5.3: Site Location in Relation to the Automatic Monitoring Locations

5.14 It is important to note that location CD010 was only commissioned in 2021 and subsequently has no annual mean concentrations for 2018-2020. Additionally, please note that 2022 is the first year that KGX monitored $PM_{2.5}$ and therefore this location has no $PM_{2.5}$ annual mean concentrations prior to 2022.

5.15 The latest published monitored NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations for the automatic monitoring locations are provided in **Tables 5.2, 5.3** and **5.4** below.

Site	Location	Site Coordinates (X,Y)	Annual Mean Concentration $N0_2$ (µg/m^3)				
			2018	2019	2020	2021	2022
BL0	London Bloomsbury (Russell Square Gardens)	530123,182014	36	32	28	27	26
CD1	Swiss Cottage (Finchley Road)	526629, 184391	**54**	**43**	33	**44**	37
CD9	Euston Road	529878, 182648	**82**	**70**	**43**	**48**	**46**
CD010	Camden High Street	528832, 183995	-	-	-	30	29

Table 5.2: NO_2 Annual Mean Concentrations at the Automatic Monitoring Locations

Site	Location	Site Coordinates (X,Y)	Annual Mean Concentration PM_{10} (µg/m^3)				
			2018	2019	2020	2021	2022
BL0	London Bloomsbury (Russell Square Gardens)	530123,182014	17	18	16	16	17
CD1	Swiss Cottage (Finchley Road)	526629, 184391	21	19	16	16	21
CD9	Euston Road	529878, 182648	21	22	18	19	21
KGX	Coopers Lane	529831, 183250	15	15	13	13	15

Table 5.3: PM_{10} Annual Mean Concentrations at the Automatic Monitoring Locations

Site	Location	Site Coordinates (X,Y)	Annual Mean Concentration $PM_{2.5}$ (µg/m^3)				
			2018	2019	2020	2021	2022
BL0	London Bloomsbury (Russell Square Gardens)	530123,182014	10	11	9	9	9
CD1	Swiss Cottage (Finchley Road)	526629, 184391	11	11	10	9	12
CD9	Euston Road	529878, 182648	15	14	11	11	12
KGX	Coopers Lane	529831, 183250	-	-	-	-	10

Table 5.4: $PM_{2.5}$ Annual Mean Concentrations at the Automatic Monitoring Locations

5.16 **Tables 5.2, 5.3** and **5.4** above demonstrates that all of the automatic monitoring locations are below the relevant national annual mean objective for NO_2, PM_{10} and $PM_{2.5}$ in 2022, except for NO_2 annual mean concentrations at CD9.

5.17 However, it is important to note that the NO_2 data capture was identified to be low at CD9: Euston Road in 2022 (79.05%). Therefore, data from this station should be treated/used with some caution.

5.18 Additionally, CD9 is located on the kerb of a very busy and congested A road (A501 Euston Road), where a high volume of traffic and/or queues are likely to occur and the buildings at both sides are very tall, causing a canyon effect which would naturally limit dispersion and increase the concentration of NO_2.

5.19 As such, this monitoring location (CD9) is not considered reflective of the pollution environment likely to be experienced at the proposed development site, which is located >300m from the kerb of a minor residential road, and as such has been excluded from the site suitability assessment.

Non-Automatic Monitoring

5.20 In addition, LBC has also undertaken non-automatic monitoring of NO_2 at various locations across the Borough in 2022. The site location in relation to the closest non-automatic monitoring locations is illustrated in **Figure 5.4** below.

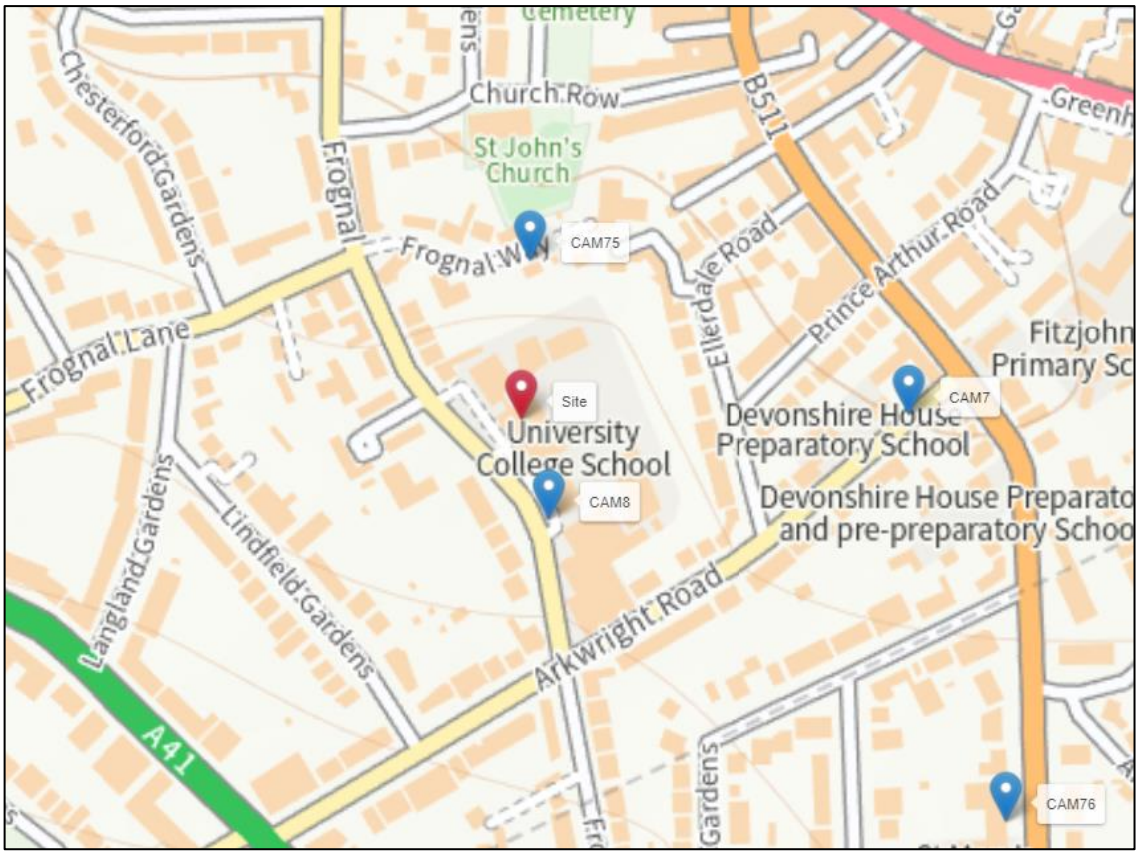

Figure 5.4: Site Location in Relation to Closest Non-Automatic Monitoring

5.21 Please note that locations CAM7 and CAM8 were only commissioned from 2019 and subsequently has no annual mean concentrations for 2018.

5.22 The annual mean concentrations of NO_2 for the closest non-automatic monitoring locations are set out in **Table 5.5** below.

Site	Location	Coordinates (X,Y)	Annual Mean Concentration NO_2 ($\mu g/m^3$)				
			2018	2019	2020	2021	2022
CAM7	Schools AQ 7 - Devonshire House Preparatory School	526479, 185411	-	**40**	31	29	28
CAM8	Schools AQ 8 - University College School Senior School	526226, 185337	-	30	23	22	20
CAM75	Frognal Way	526213, 185519	22	23	19	15	16
CAM76	47 Fitzjohn's Road	526547, 185125	**48**	**44**	34	30	28

Table 5.5: NO_2 Annual Mean Concentrations of the Closest Non-Automatic monitoring locations in relation to the Site Location

5.23 **Table 5.5** above demonstrates that all of the closest non-automatic monitoring locations are well below the national annual mean objective of 40µg/m^3 for NO_2 in 2022.

5.24 As such, the closest and most representative location of the site is CAM8 (which is located at University College School Senior School) is >5% below the national annual mean objective for NO_2 in 2022. Additionally, it is noted that the London Borough of Camden also consider the WHO air quality objectives (40µg/m^3 for NO_2) and therefore CAM8 is also >5% below this international air quality objective.

5.25 Therefore, in accordance with the exposure criteria set out in **Table 4.6,** the site is likely to fall within APEC-A for site suitability, which states the following:

"No air quality grounds for refusal; however, mitigation of any emissions should be considered".

5.26 Suitable mitigation measures, where required, have been considered within **Section 7** of this AQA.

6 Evaluation of Potential Effects

6.1 The following section sets out the potential sources of air quality impact that could be applied to the proposed development site.

Construction

Construction Dust

6.2 During the construction phases, there is the potential for emissions of dust to cause annoyance, nuisance and health effects to sensitive receptors, both human and ecological located close to the site.

6.3 The construction activities associated with the proposed development can be separated into four stages:

- Demolition/site clearance
- Earthworks;
- Construction; and
- Trackout.

6.4 There are a number of human receptors within 350m of the site boundary. Therefore, a dust assessment has been undertaken in order to evaluate and minimise potential dust effects during the aforementioned four stages.

6.5 The construction dust assessment is included in **Appendix B.**

Construction Traffic and Plant

6.6 Throughout the construction period, there will be a number of construction vehicles, stationary plant and vehicles used by the construction workforce. These may potentially present an additional source of air pollutants in the vicinity of the proposed development site.

6.7 Any likely pollutant impacts should be addressed through Best Available Techniques (BAT) mitigation measures. Likely BAT are provided in **Section 7**.

Completed Development

Development Traffic

6.8 The Transport Consultants at Price & Myers have indicated that the development is not expected to generate any additional trips and that any vehicular trips associated with the servicing of the development will be very limited or already within the local road network.

6.9 Therefore, the proposed development traffic does not meet the EPUK & IAQM criteria in **Table 4.3** for requiring further or detailed assessment.

6.10 As a result, it has not been considered necessary to further quantify traffic related impacts as a result of the operation of the proposed development and transport emissions will not need to be considered in an air quality neutral assessment.

Building Emissions

6.11 Max Fordham LLP consultants have confirmed that the energy strategy for the proposed development is likely to include the use of heat pumps to heat the building and that there will not be any fossil fuel combustion appliances.

6.12 Heat pumps are electric and are not directly associated with any NOx or Particulate emissions. The proposed energy strategy is in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria.

6.13 Therefore, no further assessment of building emissions is considered required and building emissions will not need to be considered in an air quality neutral assessment.

6.14 Compliance with relevant regulations and standards, at this stage, should be secured through planning conditions, where necessary.

Air Quality Neutral Assessment

6.15 As stated above, development is not expected to generate any additional trips and proposes an all-electric energy strategy.

6.16 Therefore, the proposed development does not meet the GLA's criteria for requiring an air quality neutral assessment and no further quantitative assessment of transport or building emissions is considered required.

7 Mitigation Measures

Construction

Construction Dust

7.1 A construction dust assessment has been completed for the proposed development in accordance with IAQM and GLA guidance and is presented in **Appendix B**. Within the assessment, site specific mitigation measures have been identified which ensure compliance with relevant standards.

7.2 The mitigation measures outlined in **Appendix B**, should make up part of a Construction Environmental Management Plan (CEMP) that should be implemented to minimise the potential adverse construction dust impacts throughout all the relevant construction stages.

7.3 It is important that attention is paid to any construction activity that takes place in close proximity to the site boundary, potentially at the closest location to sensitive receptors.

Dust Monitoring

7.4 The dust monitoring requirements are usually split in three categories as follows:

- **Negligible/Low risk** category sites - should not normally be necessary to undertake any quantitative air quality monitoring, although in some circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary at least once on each working day.
- **Medium risk** category sites - should normally be adequate to undertake surveys of dust flux over the site boundary, and/or dust deposition/soiling rates around the site at nearby receptors, although this may have resource implications, and an approach based on continuous particulate matter monitoring may be preferred.
- **High risk** category sites - normally be necessary to supplement the monitoring for medium risk sites with monitoring of ambient PM concentrations. It is recommended that priority be assigned to the measurement of PM_{10}, as emissions of dust from construction sites are predominantly in the coarser fractions.

7.5 The proposed development site has been classified as having a **medium** risk for dust soiling during demolition and **low** risk for dust soiling during the three other stages.

7.6 Therefore, dust monitoring, as specified above, should be undertaken during each of the relevant stages of construction in line with the associated identified risk to ensure that:

- The construction activities do not give rise to any exceedances of the air quality objectives for PM_{10} or $PM_{2.5}$;
- The agreed mitigation measures to control dust emissions are being applied and are effective, and;
- Any high levels of dust is attributed to specific activities on site to ensure that appropriate corrective measures take place.

7.7 The implementation of the specific mitigation measures given above within a CEMP will ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

7.8 Compliance should be secured through planning conditions, where necessary.

Construction Traffic and Plant

7.9 As previously stated, there is potential for air pollutant impacts to arise from construction plant and vehicles associated with the development. Therefore, the following BAT should be implemented during the construction phase.

- All vehicles should switch off engines when stationary, no idling vehicles;
- On-road vehicles to comply with the requirements of the Low Emission Zone and the London Non-Road Mobile Machinery (NRMM) standards, where applicable;
- All NRMM to use ultra-low sulphur diesel (ULSD) where available;
- Minimise the movement of construction traffic around the site;
- Maximising efficiency (this may include alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing);
- Vehicles should be well maintained and kept in a high standard of working order;
- Avoid the use of diesel or petrol powered generators by using mains electricity or battery powered equipment where possible; and
- Locate plant away from boundaries close to residential areas.
- Completed Development.

Operational Traffic

7.10 As previously stated, the Transport Consultants at Price & Myers have indicated that the development is not expected to generate any additional trips and that any vehicular trips associated with servicing of the development will be very limited or already within the local road network.

7.11 Consequently, the proposed development is unlikely to result in a detrimental pollution impact upon the local highway network and the current pollution levels and it is not anticipated that mitigation measures will be required.

Building Emissions

7.12 As previously stated, Max Fordham LLP consultants have confirmed that the energy strategy for the proposed development is likely to include the use of heat pumps to heat the building and that there will not be any fossil fuel combustion appliances.

7.13 Heat pumps are electric and are not directly associated with any NOx or Particulate emissions. Therefore, this would be in accordance with the minimum standard/ requirements outlined within the EPUK & IAQM criteria and as such it is not anticipated that mitigation measures would be required.

7.14 Compliance to relevant regulations and standards should be secured through planning conditions, where necessary.

Air Quality Neutral Assessment

7.15 As stated above, development is not expected to generate any additional trips and proposes an all-electric energy strategy.

7.16 Therefore, the proposed development does not meet the GLA's criteria for requiring an air quality neutral assessment and as such, it is not anticipated that mitigation measures would be required.

Site Suitability

7.17 This AQA has demonstrated that the proposed development site is likely to fall within APEC-A for site suitability.

7.18 In accordance with the exposure criteria in **Table 4.6,** means that there should be no air quality grounds for refusal and the local air quality should be suitable to safeguard the health and amenity of new residents.

8 Conclusions

8.1 The proposed site falls within the jurisdiction of London Borough of Camden (LBC).

8.2 LBC has one Air Quality Management Area (AQMA) which encompasses the whole Borough, declared in 2002. The AQMA has been declared as a result of exceedances to the annual mean objective for Nitrogen Dioxide (NO_2) and 24-hour mean objective for Particulate Material (PM_{10}). Therefore, the proposed development site lies with the boundary of LBC AQMA.

8.3 A review of the monitoring sites within the London Borough of Camden has been undertaken. It was concluded that the closest and most representative monitoring locations monitored NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations which were well below their annual mean objective in 2022. Therefore, in accordance with the exposure criteria in **Table 4.6**, the site would usually fall within APEC – A for site suitability, which states the following:

"No air quality grounds for refusal; however, mitigation of any emissions should be considered".

8.4 A construction dust assessment has been undertaken for the four stages of construction activities associated with the proposed development. Mitigation measures have been proposed for construction traffic and stationary plant associated with the proposed development (**Appendix B**).

8.5 Following the successful implementation of the specific mitigation measures for construction dust, the residual effects of construction dust and emissions from construction plant/vehicles upon the local area and sensitive receptors although adverse, will be temporary and considered to be 'not significant'.

8.6 The Transport Consultants at Price & Myers have indicated that the development is not expected to generate any additional trips and that any vehicular trips associated with servicing will be very limited or already within the local road network. Consequently, the proposed development is unlikely to result in a detrimental pollution impact upon the local road network and the current pollution levels.

8.7 Max Fordham LLP consultants have confirmed that the energy strategy for the proposed development is likely to include the use of heat pumps to heat the building and that there will not be any fossil fuel combustion appliances.

8.8 Heat pumps are electric and are not directly associated with any NOx or Particulate emissions. The proposed energy strategy is in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria.

8.9 Compliance with relevant regulations and standards, at this stage, should be secured through planning conditions, where necessary.

Conclusion

8.10 The proposed development does not raise any significant or other residual adverse impacts on the health and/or quality of life for existing neighbours, as a result of any anticipated changes to air quality.

8.11 It is therefore concluded that the proposed development complies fully with air quality related national, regional and local planning policy and any mitigation can, if considered necessary, be enforced by means of appropriate planning conditions, consistent with paragraphs 55 and 56 of the National Planning Policy Framework.

Appendix A: Proposed Site Layout, Floorplans and Elevations