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Planning Statement
Air Quality Assessment
40 - 42 Mill Lane

Document information

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Introduction
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Overview

Eight Associates has been commissioned, to carry out an air quality assessment to accompany the planning application for the proposed development of 40 – 42 Mill Lane in the London Borough of Camden. The development proposal comprises the refurbishment of upper floors and top extension of an existing building currently housing a pub. The approximate area of the mansard extension is 115m^2. The proposal seeks to separate the existing Lower Ground and Ground A4 use from the 1st and 2nd floor ancillary residential accommodation. The proposals incorporate the refurbishment and extension to create 7 self-contained C3 residential units.

The development is located within the London Borough of Camden. Since 2000, the entire London Borough of Camden has been designated an Air Quality Management Area (AQMA) due to potential exceedances of both nitrogen dioxide (NO_2) and fine particulate matter (PM10 and PM2.5). The main source of air pollution in Camden is traffic. The Council uses diffusion tubes to monitor NO_2 at 14 sites across the Borough, and maintains four automatic air quality monitoring stations which continuously measure pollutants and particulate matter.

As this development is located in the London Borough of Camden, it does fall within the designated Borough-wide AQMA. As such, assurance is required by the Council that due consideration has been given to air quality within the design of the proposed development.

This assessment has been undertaken with the aim of addressing Camden Council's Local Plan Policy A1 Minimising the Impact of Development and CC4 Air Quality.

Scope of the assessment

The existing development does not include any car parking spaces and proposed development will not include any new parking spaces. As a result, there will be a neutral impact on pollutant emissions from road traffic within the local road network from the development. Whilst the proposed development is not expected to impact air quality, it will introduce new residential receptors into an area of potential poor air quality. Information is therefore provided on the mitigation measures to be included within the detailed design of the development to reduce the exposure of residents to high concentrations of external pollutants.

Consideration has also been given to the potential for the emission of dust to arise during the construction phase. A qualitative assessment of the risk of dust impacts has been carried out using the Institute of Air Quality Management (IAQM) guidance to identify the appropriate level of mitigation that should be applied to ensure impacts can be effectively mitigated.

In summary, the assessment includes:

- Establishment of baseline air quality, including sensitive receptors;
- Assessment of dust impacts during the construction phase;
- Assessment of air quality impacts expected during the operation of the new development;
- Assessment of the mitigation strategy to limit residents' and local community exposure to elevated concentrations of air pollutants;
- Consideration of whether the proposals would meet the Air Quality Neutral benchmark emissions.

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Site Description
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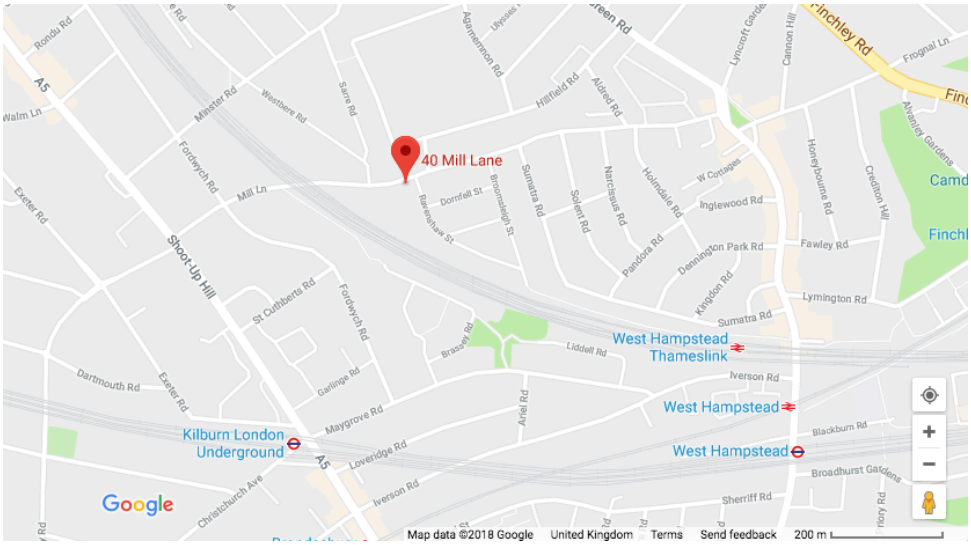
Existing Site

Existing Condition
The site is currently occupied by a single building. The existing building is a 2-storey building with 1-storey basement, comprising a pub and ancillary residential accommodation. The existing building footprint comprises the whole of the site.

Site Location
40 – 42 Mill Lane is located (see Figure 1) on the southern side of Mill Lane, and approximately 100m east of the Thameslink train line. The site is 170m north-west of Beckford Primary School and 300m directly east of Fordwych Nursery School. The nearest rail station, West Hampstead is approximately 1,000m south-west of the site and Cricklewood, is approximately 1,200m north-west of the site. West Hampstead, Kilburn and Willesdon Undergrounds are all located within approximately 500m of the site.

Figure 1: site location



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Site Description
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Proposed development

The development proposals comprise the refurbishment of upper floors and top extension of an existing building (see Figure 2) currently housing a pub. The approximate area of the mansard extension is 115m^2. The proposal seeks to separate the existing Lower Ground and Ground A4 use from the 1st and 2nd floor ancillary residential accommodation. The proposals incorporate the refurbishment and extension to create 7 self-contained C3 residential units.

Figure 2: proposed site location and boundary

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International legislation and policy

EU Directive 2008/50/EC1 on ambient air quality and Cleaner Air for Europe (the CAFE Directive) sets out the ambient air quality standards for NO_2 and PM10, to be achieved by 1st January 2010 and 2005 respectively. The Air Quality Standards Regulations 2010 implements the requirements of the Directive into UK legislation.

The Directive contains a series of limit values for the protection of human health and critical levels for the protection of vegetation.

Compliance with the EU Limit Values is mandatory. However, Member States can apply for a time extension for compliance, subject to approval of an action plan by the European Commission. The UK Government applied in autumn 2011 for a time extension for compliance with the NO_2 limit values until 2015 for a number of areas throughout England. However, the UK Government has withdrawn its application for those zones where compliance is not expected until after 2015, which includes central London.

In September 2015, DEFRA on behalf of the UK Government produced new Draft Plans for consultation to improve air quality in the UK in order to meet the EU targets in the shortest possible time. An overview document has been produced, together with detailed plans for 31 zones where air quality is not predicted to meet the objective in 2013. The plan for the Greater London Area sets out a range of measures to reduce NO_2 concentrations and indicates that with these measures air quality in London will be compliant by 2025.

National air quality strategy

The National Planning Policy Framework (NPPF) published in March 2012 sets out the Government's planning policies for England. Planning law requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise.

The NPPF is also a material consideration in planning decisions. It states that the purpose of the planning system is to contribute to the achievement of sustainable development; and that planning decisions on individual applications must reflect relevant EU obligations and statutory requirements. Specifically, in terms of air quality, it requires the planning system to prevent development from contributing to, or being put at unacceptable risk from unacceptable levels of air pollution.

Planning policies should promote compliance with or contribute towards achievement of EU limit values and NAQOs, taking into account the presence of AQMAs and the cumulative impacts on air quality from individual sites in local areas.

Planning decisions should ensure that new development within an AQMA is consistent with the Local Air Quality Action Plan.

The NPPF is supported by a series of Planning Practice Guidance. The guidance in relation to air quality provides guiding principles on how planning can take account of the impact of new development on air quality.

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Policy Context
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Local air quality management

Part IV of the Environment Act 1995, requires the UK Government to publish an Air Quality Strategy and local authorities to review, assess and manage air quality within their areas. This is known as Local Air Quality Management (LAQM).

The 2007 Air Quality Strategy establishes the policy for ambient air quality in the UK. It includes the national air quality objectives (NAQOs) for the protection of human health and vegetation for 11 pollutants. Those NAQOs included as part of LAQM are prescribed in the Air Quality (England) Regulations 20007 and the Air Quality (Amendment) (England) Regulations 2002. The table below summarises the NAQOs for NO2 and PM10.

The Air Quality Strategy also introduced a new policy framework for tackling fine particles (PM2.5) including an exposure reduction target. This pollutant is not included within LAQM, and therefore has not been considered further in this assessment.

Pollutants	Concentrations	Measured as	Date to be achieved by
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 µg/m3	Annual mean	31 December 2005
Particles (PM10)	50 µg/m^3 not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 µg/m^3	Annual mean	31 December 2004

It should be noted that the EU Limit Values are numerically the same as the NAQO values but differ in terms of compliance dates, locations where they apply and legal responsibility. The compliance date for the NO2 Limit Values is 1 January 2010, which is five years later than the date for the NAQO.

The Limit Values are mandatory whereas the NAQOs are policy objectives. Local authorities are not required to achieve them, but have to work towards their achievement. In addition, the Limit Values apply in all locations except: where members of the public do not have access and there is no fixed habitation, on factory premises or at industrial installations, and on the carriageway/central reservation of roads except where there is normally pedestrian access.

Where a local authority's review and assessment of its air quality identifies that air quality is likely to exceed the NAQOs, it must designate these areas as AQMAs and draw up an Air Quality Action Plan (AQAP) setting out measures to reduce pollutant concentrations with the aim of meeting the NAQOs.

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London-wide air quality policy

London Plan

Policy 7.14 in the London Plan (Ref. 13), 'Improving air quality' 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;
>
> 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. Permissions should only be granted if no adverse air quality impacts from the biomass boiler are identified."

The Mayor of London produced an Air Quality Strategy in 2002 (Ref. 14) under the requirements of the Greater London Authority Act 1999, setting out how the National Air Quality Strategy would be implemented in London as a whole. A replacement Mayor's Air Quality Strategy was published in December 2010 (Ref. 15). The policy applicable to this assessment and a new development includes:
Using the planning process to improve air quality by requiring new developments as a minimum to be 'air quality neutral'.

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London-wide air quality policy

Cleaning the Air - The Mayor's Air Quality Strategy, 2010

The Mayor of London has set out a detailed air quality strategy for Greater London in order to deliver the required reductions in PM10 and NO_2 concentrations to meet the EU limits.

With regard to the proposed development the key policies are as follows:

- Policy '6 - Reducing emissions from construction and demolition sites' which states that the Mayor will work with the London Council to review and update the Best Practice guidance for construction and demolition sites and create supplementary planning guidance to assist implementation;
- Policy '7 - Using the planning process to improve air quality - new developments in London as a minimum shall be 'air quality neutral' which states that the Mayor will encourage boroughs to require emissions assessments to be carried out alongside conventional air quality assessments. Where air quality impacts are predicted to arise from developments these will have to be offset by developer contributions and mitigation measures secured through planning conditions, section 106 agreements or the Community Infrastructure Levy;
- Policy '8 - Maximising the air quality benefits of low to zero carbon energy supply' which states that the Mayor will apply emission limits for both PM and NOx for new biomass boilers and NOx emission limits for Combined Heat and Power (CHP) plant. Air quality assessments will be required for all developments proposing biomass boilers or CHP plants and operators will be required to provide evidence yearly to demonstrate compliance with the emission limits; and
- Policy '9 - Energy efficient buildings' which states that the Mayor will set CO_2 reduction targets for new developments which will be achieved using the Mayor's Energy Hierarchy. These measures will result in reductions of NOx emissions.

Sustainable Design and Construction Supplementary Planning Guidance, 2014

The Supplementary Planning Guidance16 (SPG) which supports the London Plan was first published in 2006 and was updated in April 201417. The following guidance on air quality is provided in Section 4:

- Developers should design schemes to be air quality neutral;
- Developments should be designed to minimise the generation of air pollutants;
- Developments should be designed to minimise exposure to poor air quality;
- Energy plant, including boilers and CHP) should meet relevant emission limits; and
- Developers and contractors should follow the relevant guidance on minimising impacts from construction and demolition

The draft SPG states that where developers are unable to meet the 'air quality neutral' benchmark, consideration should be given to off-site NOx and PM10 abatement measures.

Mayor of London Supplementary Planning Guidance, the Control of Dust and Emissions from Construction and Demolition, 2014

This guidance updates the previous London Council's guidance to control dust and emissions from construction and demolition activities by identifying appropriate levels of mitigation.

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Camden Council policy

The Camden Local Plan was adopted in July 2017. It sets out how land in the Borough will be used and developed, and contains policies that the Council uses to determine planning applications. The following policies included in the Local Plan are related to air quality.

Policy A1 Managing the Impact of Development

In considering proposals for development, the Council will have regard to the quality of life of occupiers and neighbours to the development and will grant permission for development unless this causes unacceptable harm through impacts including odour, fumes and dust from transport, construction and building operation.

Policy CC4 Air Quality

The Council will ensure that the impact of development on air quality is assessed and potential detrimental impacts are mitigated across the Borough.

Air Quality Assessments (AQA) are required where development is likely to expose residents to high levels of air pollution, as set out by national air quality guidelines, and the impact of new development on air quality must be mitigated so as not to exceed those national limits. Development that involves significant demolition, construction or excavation should assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.

Particular consideration should be given to actions identified in the Council's Clean Air Action Plan 2016 - 2018. Relevant actions include:

- Require developers to adhere to any current and superseding best practice guidance and supplementary planning guidance on air quality during development construction and operation.
- Continue to use planning conditions and obligations to require developers to adopt measures to reduce transport emissions in operational phase of developments.
- Require developers to undertake an AQA in circumstances where a new development could have a negative impact on air quality, is adjacent to sensitive receptors such as schools, nurseries, hospitals and doctors' surgeries, or will introduce new receptors into an area of existing poor air quality.
- Ensure the enforcement of Non Road Mobile Machinery (NRMM) air quality policies for new developments.

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Sensitive Receptors
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Introduction

A sensitive receptor is a location that may be affected by emissions during demolition and construction or emissions from building operation including plant and transport.

Human receptors

A 'human receptor', refers to any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to PM10 over a time period relevant to the air quality objectives, as defined in the Government's technical guidance for Local Air Quality Management. In terms of annoyance effects, this will most commonly relate to dwellings, but may also refer to other premises such as museums, vehicle showrooms, food manufacturers and amenity areas.

An air quality assessment will normally be required where there is a 'human receptor' within:

- 350m of the boundary of the site; or
- 50m of the route used by construction vehicles on the public highway, up to 500m from the site entrance(s).

The proposed development at 40-42 Mill Lane has a number of human receptors within 350m of the site, as shown on the aerial view map on the page below. The surrounding area is densely populated and contains numerous residential dwellings. Key human receptors, as specified in Camden Council's Clean Air Action Plan are identified below:

Schools

The only school within 350m of the development is Beckford Primary School which is 170m north-west of site.

Nurseries

Fordwych Nursery School is 300m east of site.

Hospitals

There is no hospital within 350m of the site.

Doctors Surgeries

There are no doctors surgeries within 350m of the site.

Ecological receptors

An air quality assessment will normally be required where there is 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).

No ecological receptors have been identified within proximity of the proposed development. The closest ecological receptor is Maygrove Peace Park, which is approximately 300m south-west of the proposed development site.

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Aerial view of proposed site

The figure below shows an aerial view of the proposed development site, with a 350m radius for identification of sensitive receptors overlaid.

Existing Air Quality
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Current local status

The Council monitors NO_2 at 14 sites across the Borough using diffusion tubes, and maintains four automatic air quality monitoring stations which continuously measure pollutants and particulate matter. These are located at:

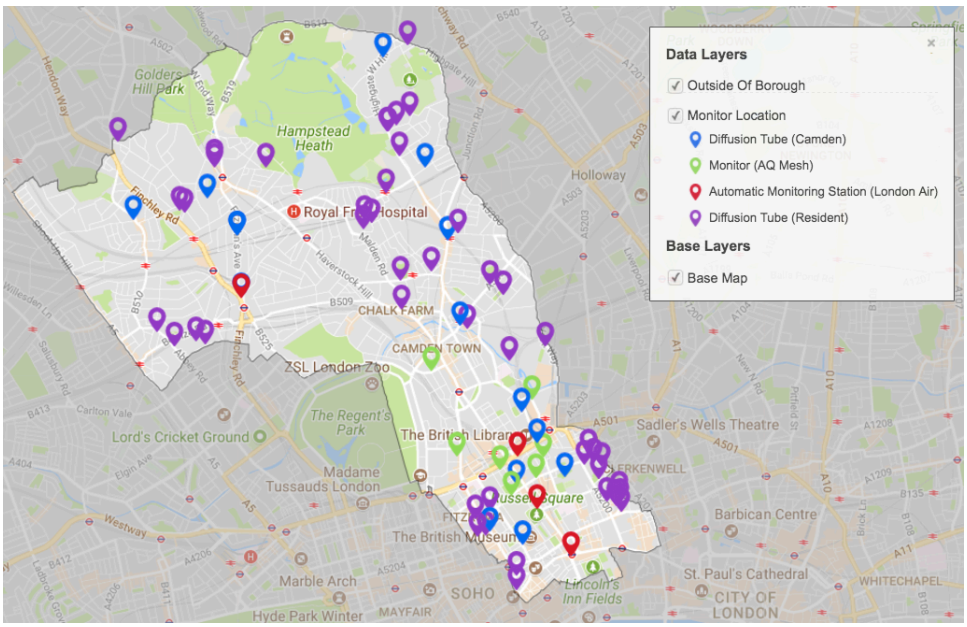
- Finchley Road (approximately 50m north of Swiss Cottage Station), measuring NO_2, PM10 and PM2.5;
- Euston Road (approximately 200m east of Euston Station), measuring NO_2, PM10 and PM2.5;
- Bloomsbury (at Russell Square), measuring carbon monoxide, NO_2, PM10, PM2.5, ozone and sulphur dioxide;
- Holborn (on A4200 opposite Holborn Station), measuring NO_2.

The closest automatic monitoring station to the site is located at Finchley Road which is approximately 1,970m south-west of the site.

The closest NO_2 monitoring diffusion tube to the site is located approximately 550m east of the site.

Additional air quality monitoring is currently being conducted across Camden with community-managed NO_2 diffusion tubes and Air Quality (AQ) Mesh monitors (small, portable units that measure NO_2, PM10 and PM2.5).

The figure below shows the air quality monitoring locations within the London Borough of Camden.



Existing Air Quality
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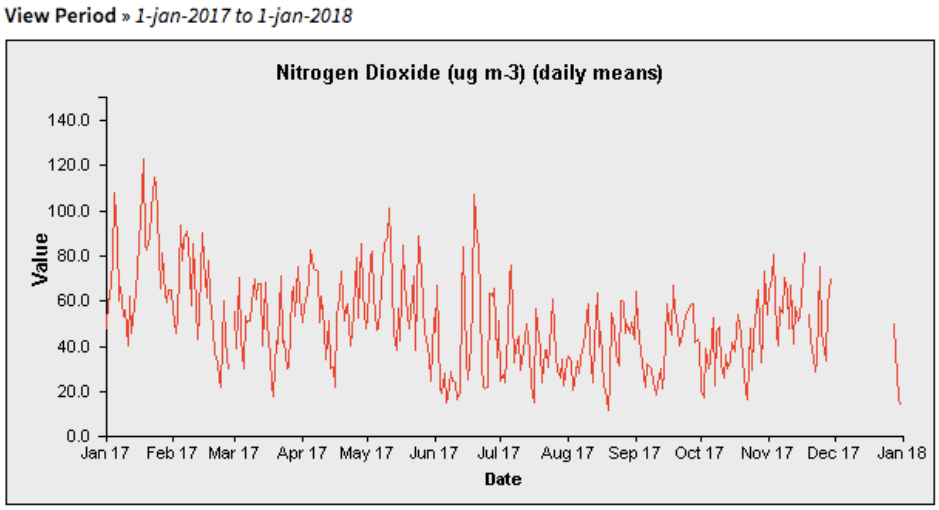
Current local status

Nitrogen dioxide (NO_2)

The graph below demonstrates that the average annual mean in 2017 for NO_2 exceeded 40 µg/m^3.



A summary of results from the nearby NO_2 diffusion tube and automatic monitoring stations for annual (2017-2018) mean concentration of NO_2 is shown in the table below:

Site	Type of monitor	Distance from proposed development (metres)	Annual mean concentration (2017-18, µg/m^3)	Compliance with NAQOs
Emmanuel Primary School	Diffusion Tube	300	45.22	FAIL
Frognal Way	Diffusion Tube	900	26.68	PASS
Swiss Cottage 1, Finchley Road	Diffusion Tube	2,000	61.08	FAIL
Swiss Cottage 2, Finchley Road	Diffusion Tube	2,000	59.45	FAIL
Swiss Cottage 3, Finchley Road	Diffusion Tube	2,000	62.78	FAIL
Swiss Cottage	Automatic Station	2,000	50.40	FAIL

Current local status (continued)

The data collected by Camden Council reports continued exceedances of the NAQOs (refer to page 6 for values) within the London Borough of Camden AQMA, of the NO_2 annual mean concentration objective.

The Council presents air quality data over a longer reporting period in its Clean Air Action Plan. The five-year trend across the London Borough of Camden shows that there is a slight downward trend in recorded NO_2 concentrations between 2009 and 2014, although on a longer reporting period, from 2001, concentrations have remained largely consistent.

Particulate matter (PM10)

PM10 is monitored annually at three locations across the London Borough of Camden. Annual mean concentrations are provided in the table below. PM10 concentrations comply with NAQOs at each monitoring location.

Site	Type of monitor	Distance from proposed development (metres)	Annual mean concentration (2016-17, $\mu g/m^3$)	Compliance with NAQOs
Euston Road	Automatic Station	5,480	20.9	PASS
Bloomsbury (Russell Square)	Automatic Station	6,160	19.9	PASS
Swiss Cottage	Automatic Station	2,000	24.3	PASS

Whilst PM10 and other particulate matter is acknowledged in this report, the impact of the development on NO_2 and NOx emissions are prioritised, due to the high ambient concentrations in the area.

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Construction Phase Impacts

Air Quality Assessment

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Introduction

Construction phase impacts as a result of the proposed development have been assessed using the IAQM document: "Guidance on the assessment of dust from demolition and construction, version 1,1." The construction phase impacts have been assessed for their risks in line with section 5 of the guidance.

Assessment of impacts

The development proposals comprise the refurbishment of upper floors and top extension of an existing building currently housing a pub. The approximate area of the mansard extension is 115m^2. The site is located in a densely built up area with numerous receptors within 20 m therefore a detailed assessment of potential dust effects is required.

The review of the surrounding site has not identified any ecological receptors or habitats that would be sensitive to dust impacts within 50 m of the proposed site boundary therefore, no ecological effects are predicted to occur.

Using the evaluation criteria within the IAQM's Guidance the potential dust emission magnitude has been identified for each stage of the proposed development as shown in the table below.

Activity	Dust emission magnitude	Justification
Demolition	Small	The total existing building volume is approximately 830 m^3 with low potential for dust release.
Excavation	Small	The total site area is approximately 312 m^2, and little to no excavation will be needed.
Construction	Small	The total new building volume will be <1,200 m^3.
Trackout	Small	It is assumed that maximum heavy duty vehicles movements over the course of the development would be less than 10 outward movements per day with a moderately dusty surface material and no unpaved road.

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Construction Phase Impacts

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Assessment of impacts (continued)

The overall sensitivity of the development area to dust soiling, human health impacts and ecological receptors has been determined by reviewing the sensitivity of the receptors and distance from the source.

The following table outlines the sensitivity of dust impacts:

Sensitivity to dust soiling	Sensitivity to human health impacts	Sensitivity to ecological receptors
High – number of receptors within 50 m of the site is between 10 and 100. Immediate surrounds of the site include a significant number of dwellings and a school	High – significant number of dwellings within 50 m of the site, NO_2 concentrations at nearest monitoring point were 88.0 µg/m3 in 2014.	N/A – no ecological receptors sensitive to dust within 50 m of the site or within 50 m of the route used by construction vehicles for a distance of 500 m.

The dust emission magnitude determined on the previous page has been combined with the sensitivity assessment in the above table to define the risk of impacts for each phase of development in the absence of mitigation. The risk level has been defined inline with in the IAQM guidance document and the results are demonstrated below. The overall risk of dust impacts in the absence of mitigation has been assessed as being medium risk.

Risk of dust impacts with no mitigation

	Dust Emission Magnitude		Construction Phase			
			Demolition	Excavation	Construction	Trackout
			Small	Small	Small	Small
Sensitivity of the surrounding area	Dust soiling	High risk	Medium risk	Medium risk	Medium risk	Medium risk
	Human Heath	High risk	Medium risk	Medium risk	Medium risk	Medium risk

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Construction Phase Impacts

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Mitigation of construction impacts

Good site management will be required to control the dust emissions from demolition and construction. The following mitigation techniques will reduce emissions of dust and limit dispersion. It is recommended that these measures be set out in the Dust Management Plan which would form part of the proposed development's overall Construction Management Plan.

Communications	
Mitigation measure	**Compliance requirements**
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	Highly recommended
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	Highly recommended
Display the head or regional office contact information.	Highly recommended

Demolition	
Mitigation measure	**Compliance requirements**
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	Desirable
Ensure effective water suppression is used during demolition operations.	Highly recommended
Bag and remove any biological debris or damp down such material before demolition.	Highly recommended

Construction Phase Impacts

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Mitigation of construction impacts (continued)

Dust management	
Mitigation measure	**Compliance requirements**
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, realtime PM10 continuous monitoring and/or visual inspections.	Highly recommended
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner.	Highly recommended
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results.	Desirable
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	Highly recommended
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	Highly recommended
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.	Highly recommended
Ensure all vehicles switch off engines when stationary - no idling vehicles.	Highly recommended
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.	Highly recommended
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	Highly recommended
Use enclosed chutes and conveyors and covered skips.	Highly recommended
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	Highly recommended

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Mitigation of construction impacts (continued)

Construction	
Mitigation measure	**Compliance requirements**
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out.	Highly recommended
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	Desirable

Trackout	
Mitigation measure	**Compliance requirements**
Use water-assisted dust sweeping on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	Highly recommended
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	Highly recommended
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Highly recommended
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	Highly recommended

Operational Impacts
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Traffic impacts

The existing development does not include any car parking spaces and proposed development will not include any new parking spaces. As a result, there will be a neutral impact on pollutant emissions from road traffic within the local road network from the development.

Energy plant emissions

The proposed energy strategy is to reduce the overall energy demand as far as practically and economically possible, by implementing energy efficiency measures before applying low carbon and renewable energy technologies.

Existing plant emissions

The impact of the proposed development on energy plant emissions can be calculated by first establishing the baseline energy plant emissions from the existing development. Whilst no data is currently recorded on the existing energy plant and gas consumption, the existing energy plant emissions can be calculated using the following assumptions:

- Water and space heating for the existing residential dwellings is provided with gas-fired condensing-combination boilers optimally sized and located in each respective dwelling. A standardised NOx emissions factor of 70 mg/kWh for this boiler type has been assumed[1].
- Gas consumption data for the existing residential dwellings is not recorded but can be assumed using the median gas consumption for similar dwellings in London, of 140 kWh/m^2/annum[2].

Dwelling	Gas consumption (kWh/annum)	NOx emissions (mg NOx/annum)
Unit 1	10,080	705,600
Unit 2	5,398	377,888
Unit 3	9,300	651,014
Unit 4	10,258	718,046
Unit 5	11,509	805,658
Total	**46,545**	**3,258,206**

Proposed development plant emissions

Water and space heating for the seven proposed residential dwellings will be provided with individual gas-fired condensing boilers for each respective dwelling. Boilers will be optimally sized for the respective dwellings' heating demand. The heating demand for each dwelling and resulting gas consumption has been modelled in the energy assessment for the development and is outlined in the table below.

[1] NOx Emissions from Domestic Boilers in London (2014), AMEC, Greater London Authority
[2] National Energy Efficiency Data-Framework - Summary of Analysis using the National Energy Efficiency Data-Framework Part I Domestic Energy Consumption (2013), Department of Energy and Climate Change

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Energy plant emissions (continued)

Low NOx emissions class 7 combi-gas boilers will be specified for all residential dwellings in-line with Building Research Establishment Environmental Assessment Method (BREEAM) and Code for Sustainable Homes best-practice guidelines for NOx emissions of ≤ 40 mg/kWh. NOx emissions from the proposed dwellings are provided in the table below.

Dwelling	Gas consumption (kWh/annum)	NOx emissions (mg NOx/annum)
Unit 1	7,040	281,606
Unit 2	3,510	140,417
Unit 3	6,910	276,411
Unit 4	5,316	212,634
Unit 5	5,951	238,046
Unit 6	4,511	180,423
Unit 7	4,405	176,190
Total	**37,643**	**1,505,727**

The total post-development gas consumption is 37,643 kWh/annum, compared to 46,545 kWh/annum for pre-development.

The total post-development NOx emissions from energy plant are 1,505,727 mg/annum, compared to 3,258,206 mg/annum for pre-development. The proposed development could result in a net decrease in NOx emissions of approximately 1,752,479 mg/annum.

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Mitigation of Operational Impacts

Air Quality Assessment

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Mitigation of operation traffic impacts	As no parking will be provided for residents and office users, there will be a neutral impact on pollutant emissions from road traffic within the local road network from the development and no mitigation is required. A detailed travel plan will be produced for the development (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety.
Mitigation of energy plant emissions impacts	All residential dwellings will be serviced by low NOx emissions class 7 combi-gas boilers, in-line with BREEAM and Code for Sustainable Homes best-practice guidelines with NOx emissions of ≤ 40 mg/kWh. The configuration of flue systems and location of emission sources from the gas-condensing boilers for the residential dwellings will maximise the distance between pollutant emission source and the nearest sensitive human receptor.

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Air Quality Neutral Assessment

Air Quality Assessment

40 - 42 Mill Lane

Introduction	The Sustainable Design and Construction SPG, issued by the Mayor of London, sets out the requirement for all major developments in Greater London to undertaken an Air Quality Neutral Assessment. A development is considered to be air quality neutral if it can be demonstrated either that emissions from a development's operations and transport are reduced from pre-development or achieve the relevant emission benchmarks provided in the guidance. The proposed development is not a major development and is not required to be assessed against the Air Quality Criteria, but is assessed against the criteria in this report as a best practice benchmark for an air quality assessment.
Transport emissions	There will be a neutral impact on pollutant emissions from road traffic within the local road network from the development.
Building emissions	The Sustainable Design and Construction SPG provides air quality neutral emissions benchmarks for both NOx and PM10. As NOx has been identified in this report as a local air pollutant with high ambient concentrations, exceeding NAQOs, NOx building emissions are assessed using this methodology. It is calculated in the Operational Impacts section that there may be a net decrease in NOx emissions of approximately 1,752,479 mg/annum from pre-development to post-development. The NOx building emissions benchmark for residential dwellings is 26.2 g/m^2/annum, which the proposed dwellings achieve.
Construction emissions	The overall risk of dust impacts in the absence of mitigation was been assessed as being medium risk. However, the emissions of dust and exhaust gases from construction activities will be effectively controlled through the use of suitable mitigation measures implemented through the provision of a dust management plan which would be agreed with Camden Borough Council prior to the start of construction.
Air quality neutral statement	The development is not expected to result in an increase of pollutant emissions over the existing situation and is expected to meet the Air Quality Neutral emission benchmarks.

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Summary and Conclusions

Air Quality Assessment

40 - 42 Mill Lane

Conclusions

The proposed development is located within the Camden-wide AQMA as defined by Camden Borough Council. This air quality assessment has determined that the development will not have a negative impact on the local air quality and on the local AQMA.

This air quality assessment has found that nitrogen dioxide (NO_2) concentrations currently exceed and PM10 concentrations do not exceed their respective national Air Quality Strategy Objectives across the surrounding area to the proposed Mill Lane development.

The proposed development will install more energy efficient plant than the existing scheme. Building emissions will be minimised and reduced from the existing development through the use of low NOx emissions class 7 gas-fired condensing boilers. The proposed development will not introduce any new car parking spaces and no car parking spaces are provided in the existing development, as such there will be a neutral effect on emissions from transport and no mitigation measures are required. As such the development is not expected to result in an overall increase of pollutant emissions over the existing situation and is expected to meet the Air Quality Neutral emission benchmarks.

During the construction phase, emissions of dust and exhaust gases from construction activities will be effectively controlled through the use of suitable mitigation measures implemented through the provision of a dust management plan which would be agreed with Camden Borough Council prior to the start of construction.

The proposed development is situated in the vicinity of sensitive human receptors; the closest of which being Beckford Primary School and Fordwych Nursery which is located in close proximity to the development. The impact on these educational facilities has been addressed as the closest sensitive receptors. It has been demonstrated there will be no net increase in air pollution from the operational phase of the proposed development. During the construction phase, emissions and the impact on the neighbouring sensitive receptors will be minimised through the measures detailed in the dust management plan.

The proposed development will introduce new residential units into an area which exceeds the annual mean NO_2 objective. The ventilation strategy is yet to be finalised but it is anticipated that the dwellings will be provided with mechanical ventilation systems with heat recovery to comply with Building Regulation requirements. It is anticipated that the seven residential dwellings will use a combined mechanical and natural ventilation strategy. As the residential dwellings are located upwards from the 1st storey, it is considered that NOx emissions and particulate matter from traffic emissions will be sufficiently diffuse by 1st storey height to not negatively impact on the air quality for residents.