Churchway

Air Quality Assessment

On behalf of

MOORGARTH LIVING LIMITED

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1 Introduction

1.1 Proposed Development

1.1.1 Peter Brett Associates LLP (PBA) has been commissioned to undertake an air quality assessment to support a planning application for a proposed office development on Churchway.

1.1.2 The application is for a five-storey office building without parking, located within the administrative boundary of the London Borough of Camden (LBC).

1.2 Scope

1.2.1 This report describes existing air quality within the study area, considers the suitability of the site for an office building development, and assesses the impact of the demolition and construction of the development on air quality in the surrounding area. The main air pollutants of concern related to construction are dust and particulate matter (PM_{10}), and for road traffic are nitrogen dioxide (NO_2), PM_{10} and $PM_{2.5}$.

1.2.2 The proposed development site is located at the end of an Air Quality focus area (LAEI, 2013). However, the site is not next to a busy road as it is 150m away from Euston Road and 130m away from Eversholt Street (**Figure 1**).

1.2.3 The proposed development will not include any parking on site so the potential impact of development traffic emissions on the local air quality has been scoped out. There are no residential receptors proposed and therefore only the short-term air quality strategy objectives will need consideration to determine site suitability.

1.2.4 The proposed development will not include an energy centre. Therefore, an assessment of the effect of potential energy centre emissions has also been scoped out.

1.2.5 As there will be no traffic generated by the development and no energy centre, no assessment of emissions against air quality neutral criteria has been carried out. However, the development will be better than 'air quality neutral' as it does not have any transport or energy centre related emissions.

1.2.6 The assessment has been prepared taking into account all relevant local and national guidance, policy and legislation.

2 Legislation and Policy

2.1 The Air Quality Strategy

2.1.1 The Air Quality Strategy (2007) establishes the policy framework for ambient air quality management and assessment in the UK (DETR, 2007). The primary objective is to ensure that everyone can enjoy a level of ambient air quality which poses no significant risk to health or quality of life. The Strategy sets out the National Air Quality Objectives (NAQOs) and Government policy on achieving these objectives.

2.1.2 Part IV of the Environment Act 1995 introduced a system of Local Air Quality Management (LAQM) (Environment Act, 1995). This requires local authorities to regularly and systematically review and assess air quality within their boundary, and appraise development and transport plans against these assessments. The relevant NAQOs for LAQM are prescribed in the Air Quality (England) Regulations 2000 (Statutory Instrument, 2000) and the Air Quality (Amendment) (England) Regulations 2002 (Statutory Instrument, 2002).

2.1.3 Where an objective is unlikely to be met, the local authority must designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) setting out the measures it intends to introduce in pursuit of the objectives within its AQMA.

2.1.4 The Local Air Quality Management Technical Guidance 2016, issued by the Department for Environment, Food and Rural Affairs (Defra) for Local Authorities provides advice as to where the NAQOs apply (LAQM.TG(16); Defra, 2016). These include outdoor locations where members of the public are likely to be regularly present for the averaging period of the objective (which vary from 15 minutes to a year). Thus, for example, annual mean objectives apply at the façades of residential properties, whilst the 24-hour objective (for PM_{10}) would also apply within the garden. They do not apply to occupational, indoor or in-vehicle exposure.

2.2 EU Limit Values

2.2.1 The Air Quality Standards Regulations 2010 implements the European Union's Directive on ambient air quality and cleaner air for Europe (2008/50/EC), and includes limit values for NO_2 (Statutory Instrument, 2010). These limit values are numerically the same as the NAQO values but differ in terms of compliance dates, locations where they apply and the legal responsibility for ensuring that they are complied with. The compliance date for the NO_2 EU Limit Value was 1 January 2010, five years later than the date for the NAQO.

2.2.2 Directive 2008/50/EC consolidated the previous framework directive on ambient air quality assessment and management and its first three daughter directives. The limit values remained unchanged, but it now allows Member States a time extension for compliance, subject to European Commission (EC) approval.

2.2.3 The Directive limit values are applicable at 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 to which all relevant provisions concerning health and safety at work apply; and
- On the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access.

2.3 Planning Policy

National Policy

2.3.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they are expected to be applied (Ministry of Housing, Communities & Local Government, 2018). In relation to achieving sustainable development, paragraph 8 states that:

"*Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):*
…
*c) **an environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

2.3.2 So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development. Paragraph 11 states that plans and decisions should apply a presumption in favour of sustainable development, which for decision-taking means:

"… d) where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
…
ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."

2.3.3 Paragraph 54 on planning conditions and obligations states:

"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."

2.3.4 Paragraph 102 on promoting sustainable transport states:

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

2.3.5 Paragraph 103 goes on to state:

"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."

2.3.6 Paragraph 170 on conserving and enhancing the natural environment 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 stability. 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, and…"

2.3.7 Paragraph 180 within ground conditions and pollution 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."

2.3.8 Paragraph 181, also states 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. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. 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."

Planning Practice Guidance

2.3.9 The Planning Practice Guidance (PPG) was first published in March 2014 to support the NPPF (Planning Practice Guidance, 2014). Paragraph 001, Reference 32-007-20140306 (revision date 06.03.2014) of the PPG provides a summary as to why air quality is a consideration for planning:

"… Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit… The local air quality management (LAQM) regime requires every district and unitary authority to regularly review and assess air quality in their area. These reviews identify whether national objectives have been, or will be, achieved at relevant locations, by an applicable date… If national objectives are not met, or at risk of not being met, the local authority concerned must declare an air quality management area and prepare an air quality action plan… Air quality can also affect biodiversity and may therefore impact on our international obligations under the Habitats Directive… Odour and dust can also be a planning concern, for example, because of the effect on local amenity."

2.3.10 Paragraph 002, Reference 32-002-20140306, of the PPG concerns the role of Local Plans with regard to air quality:

"… Drawing on the review of air quality carried out for the local air quality management regime, the Local Plan may need to consider:

- *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments;*
- *the impact of point sources of air pollution ...; and*

- *ways in which new development would be appropriate in locations where air quality is or likely to be a concern and not give rise to unacceptable risks from pollution. This could be through, for example, identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable."*

2.3.11 Paragraph 005, Reference 32-005-20140306, of the PPG identifies when air quality could be relevant for a planning decision:

"... When deciding whether air quality is relevant to a planning application, considerations could include whether the development would:

- *Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; adds to turnover in a large car park; or result in construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more.*

- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area.*

- *Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality.*

- *Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations.*

- *Affect biodiversity. In particular, is it likely to result in deposition or concentration of pollutants that significantly affect a European-designated wildlife site, and is not directly connected with or necessary to the management of the site, or does it otherwise affect biodiversity, particularly designated wildlife sites."*

2.3.12 Paragraph 007, Reference 32-007-20140306, of the PPG provides guidance on how detailed an assessment needs to be:

"Assessments should be proportionate to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be locationally specific."

2.3.13 Paragraph 008, Reference 32-008-20140306, of the PPG provides guidance on how an impact on air quality can be mitigated:

"Mitigation options where necessary will be locationally specific, will depend on the proposed development and should be proportionate to the likely impact… Examples of mitigation include:

- *the design and layout of development to increase separation distances from sources of air pollution;*

- *using green infrastructure, in particular trees, to absorb dust and other pollutants;*

- *means of ventilation;*

- *promoting infrastructure to promote modes of transport with low impact on air quality;*

- *controlling dust and emissions from construction, operation and demolition; and*

- *contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development."*

2.3.14 Paragraph 009, Reference 32-009-20140306, of the PPG provides guidance on how considerations about air quality fit into the development management process by means of a flowchart. The final two stages in the process deal with the results of the assessment:

"Will the proposed development (including mitigation) lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or national objectives for pollutants or fail to comply with the requirements of the Habitats Regulations." If Yes:

"Consider how the proposal could be amended to make it acceptable or, where not practicable, consider whether planning permission should be refused."

The London Plan

2.3.15 The London Plan Consolidated with Alterations since 2011 provides strategic planning guidance for Greater London (Greater London Authority, 2016). Each Borough's development plans must be in 'general conformity' with it.

2.3.16 The Plan includes Policy 7.14 (Improving Air Quality) which states that development proposals should:

- 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 in likely to be used by large numbers of people vulnerable to poor air quality, such as steps to promote greater use of sustainable transport modes;

- Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the Greater London Authority and London Councils 'The control of dust and emissions from construction and demolition';

- Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as AQMAs);

- Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where this provision is demonstrated to be impractical or inappropriate, and that 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

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

2.3.17 Boroughs and others with relevant responsibilities should also have policies that:

- Seek reductions in levels of pollutants referred to in the Government's National Air Quality Strategy having regard to the Mayor's Air Quality Strategy; and

- Take account of the findings of the Air Quality Review and Assessments and Action Plans, in particular where AQMAs have been designated.

2.3.18 The Mayor will work with strategic partners to ensure the spatial, transport and design policies of the London Plan support his Air Quality Strategy.

2.3.19 The Plan also includes Policy 8.2 (Planning Obligations) which states that the Mayor will provide guidance for boroughs and other partners on the preparation of frameworks for negotiations on planning obligations reflecting strategic priorities including the improvement of Air Quality.

Draft London Plan

2.3.20 The London Plan: The Spatial Development Strategy for Greater London (Draft London Plan) was published for public consultation in December 2017 and sets out the Mayor of London's overall strategic plan for London (Greater London Authority, 2017). The Draft London Plan runs from 2019 to 2041 in order to provide a longer-term view of London's development to inform decision making.

2.3.21 The draft Plan includes Policy Sustainable Infrastructure 1 Improving Air Quality which states:

"*London's air quality should be significantly improved and exposure to poor air quality, especially for vulnerable people, should be reduced:*

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) reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality

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

2) 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. Particular care should be taken with developments that are 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.

3) The development of large-scale redevelopment areas, such as Opportunity Areas and those subject to an Environmental Impact Assessment should propose methods of achieving an Air Quality Positive approach through the new development. All other developments should be at least Air Quality Neutral.

4) 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.

5) Air Quality Assessments (AQAs) should be submitted with all major developments, unless they can demonstrate that transport and building emissions will be less than the previous or existing use. Development proposals should ensure that where emissions need to be reduced, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated.

6) Development proposals should ensure that where emissions need to be reduced, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate,

off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated."

Sustainable Design and Construction Supplementary Planning Guidance

2.3.22 Supplementary Planning Guidance (SPG) on 'Sustainable Design and Construction' adopted in April 2014 forms part of the Implementation Framework for the London Plan (Greater London Authority, 2014). For air pollution, the Mayor's Priorities are stated as:

- Developers are to design their schemes so that they are at least 'air quality neutral';
- Developments should be designed to minimise the generation of air pollution;
- Developments should be designed to minimise and mitigate against increased exposure to poor air quality;
- Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants set out in Appendix 7 (of the document); and
- Developers and contractors should follow the guidance set out in the SPG on 'The control of dust and emissions during construction and demolition' when constructing their development (Greater London Authority, 2014b).

2.3.23 The SPG on 'Sustainable Design and Construction' requires that air quality assessments are prepared for major developments where the development:

- is located within an AQMA;
- is likely to result in a new air pollution exceedance;
- is located within 150 m of a sensitive receptor (schools, hospitals, care homes, nurseries, residential development);
- will bring sensitive receptors into an area of poor air quality;
- includes biomass boilers and/or combined heat and power; and
- involves waste management/treatment activities, mineral extraction or any other general industrial combustion process.

2.3.24 For major developments that meet the above criteria, an air quality assessment is required to be submitted with the planning application and include:

- a review of air quality around the development site using existing air quality monitoring and/or modelling data;
- air quality dispersion modelling data carried out in accordance with the London Councils Air Quality and Planning Guidance;
- an indication of the number of people (receptors) which will be exposed to poor air quality as a result of the development, and show their location on a map;
- an assessment of the impact on air quality during the construction phase and detailed mitigation methods for controlling dust and pollution emissions in line with the adopted SPG on 'The control of dust and emissions from construction and demolition';

- an outline and justification of mitigation measures associated with the design, location and operation of the development in order to reduce air pollution and exposure to poor air quality; and
- a maintenance regime for any combustion equipment or mitigation measures.

2.3.25 The SPG on 'Sustainable Design and Construction' provides guidance on:

- Minimising air quality emissions from location, transport, construction and demolition, and design and occupation;
- Protecting internal air quality;
- What is meant by 'air quality neutral';
- Emissions standards for combustion plant; and
- Offsetting provisions.

2.3.26 'Air quality neutral' applies across London as a whole and emission benchmarks have been proposed in terms of buildings' operation and transport emissions in order to meet these criteria. It is understood that the benchmark should be capable of being met without the need for significant additional mitigation.

2.3.27 Where developments do not meet the air quality neutral benchmarks, it is suggested that appropriate on-site mitigation measures will be required to off-set any excess in emissions. Measures could include:

- Green planting/walls and screens;
- Upgrade or abatement work to combustion plant;
- Retro-fitting abatement technology for vehicles and flues; and
- Exposure reduction.

Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance

2.3.28 In addition, as part of the Implementation Framework for the London Plan, a SPG on 'The control of dust and emissions during construction and demolition' was published in July 2014 (Greater London Authority, 2014).

2.3.29 This SPG requires an 'Air Quality and Dust Risk Assessment' to be submitted at the time of a planning application; with an Air Quality and Dust Management Plan submitted prior to the commencement of works.

2.3.30 It also provides guidance for:

- The preparation of an 'Air Quality and Dust Risk Assessment' for construction and demolition activities, including air quality (dust) risk assessments;
- The stages of development the 'Air Quality and Dust Risk Assessment' is to cover include demolition, earthwork, construction stages and trackout (vehicles leaving the site);
- The identification of the potential scale (large, medium, small) of dust emissions for each stage of work;

- The identification of the level of risk due to the scale of dust emissions on soiling (dirt), health and the natural environment, depending on the duration of the activities, their intensity, the prevailing meteorological conditions, the existing levels of background pollution and the sensitivity of receptors to dust;
- Best practice methods for controlling dust and pollution control on-site and to prevent trackout;
- Recommendations for monitoring low, medium and/or high risk sites; and
- Early notification of new 2015 and 2020 standards for non-road mobile machinery.

Mayor's Air Quality Strategy

2.3.31 The Mayor's Air Quality Strategy (2010) sets out policies to improve air quality in London (Greater London Authority, 2010), and includes the following measures:

- Ensuring that public transport becomes cleaner;
- Reducing traffic growth by improving public transport and encouraging developers to make easy access to public transport in new developments; and
- Introduction of Phase 3 of the Low Emission Zone (LEZ) in 2012 to cover PM_{10} emissions from minibuses and heavier Light Goods Vehicles (LGVs), and a LEZ Nitrogen Oxides (NO_x) standard from 2015.

2.3.32 Policy 7 on 'Using the planning process to improve air quality' aims to ensure that no new development has a negative impact on air quality in London. It states that the Mayor will use his planning powers to:

- Develop a check list to guide boroughs and developers in the assessment of potential emissions from new developments;
- Minimise increased exposure to existing poor air quality, particularly in AQMAs and where developments are to be used by large numbers of vulnerable people;
- Ensure air quality benefits are realised through planning conditions and Section 106 agreements; and
- A package of non-transport policy measures is also proposed to reduce localised pollution sources.

Draft London Environmental Strategy 2017

2.3.33 The draft London Environmental Strategy evaluates the current condition of London's environment at a city-wide level. It aims "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" among other objectives (Mayor of London, 2017). Chapter 4 of the document includes a series of objectives, policies and proposals to improve air quality.

Local Policy

Camden Local Plan

2.3.34 The Camden Local Plan (2016 – 2031) sets out the Council's planning policies to deliver Camden Plan and other local priorities. The plan actively supports the improvement of Air Quality in Camden. The main policy related to Air Quality is Policy CC4.

2.3.35 Policy CC4 Air Quality within the local plan seeks to ensure that houses and schools are not unduly affected by new development or located in areas of existing poor air quality unless acceptable mitigation measures are included.

"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."

2.3.36 In addition to Policy CC4, the plan actively supports the improvement in air quality in Camden by:

- Requiring all new developments within the borough to be 'car-free';
- Maintaining and increasing green infrastructure;
- Reducing emissions associated with new developments; and
- Supporting and encouraging sensitive energy efficiency improvements to existing buildings.

Air Quality Action Plan

2.3.37 The Council's Air Quality Action Plan identifies actions and mitigating measures to be implemented by the Council and partners to reduce NO_2 and PM_{10} from road transport; gas boilers; new developments; and small industrial processes. The Air Quality Action Plan takes account of the measures contained within the Mayor's Air Quality Strategy 'Clearing the Air' and that developments must demonstrate that they are at least air quality neutral.

3 Methodology

3.1 Existing Conditions

3.1.1 Information on existing air quality has been obtained by collating the results of monitoring carried out by the LBC. Background concentrations for the site have been defined using the national pollution maps published by Defra. These cover the whole country on a 1x1 km grid (Defra, 2018).

3.2 Construction Impacts

3.2.1 The Institute of Air Quality Management (IAQM) has issued revised guidance on the assessment of dust from demolition and construction (Holman et al, 2014). Within the IAQM guidance, an 'impact' is described as a change in pollutant concentrations or dust deposition and an 'effect' is described as the consequence of an impact.

3.2.2 During pre-construction demolition and construction, the main potential effects are dust annoyance and locally elevated concentrations of PM_{10}. The suspension of particles in the air is dependent on surface characteristics, weather conditions and on-site activities. Impacts have the potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source.

3.2.3 Separation distance is also an important factor. Large dust particles (greater than 30µm), responsible for most dust annoyance, will largely deposit within 100 m of sources. Intermediate particles (10-30µm) can travel 200 – 500 m. Consequently, significant dust annoyance is usually limited to within a few hundred metres of its source. Smaller particles (less than 10µm) are deposited slowly and may travel up to 1 km; however, the impact on the short-term concentrations of PM_{10} occurs over a shorter distance. This is due to the rapid decrease in concentrations with distance from the source due to dispersion.

3.2.4 The SPG on 'The control of dust and emissions during construction and demolition' (Greater London Authority, 2014b) outlines the risk evaluation to consider based on the site evaluation process set out in the Institute of Air Quality Management (IAQM) 2014 guidance on the assessment of dust from demolition and construction (Holman et al, 2014).

3.2.5 In accordance with this SPG, the dust emission magnitude is defined as either large, medium or small (**Table 3.1**) taking into account the general activity descriptors on site and professional judgement.

3.2.6 The sensitivity of the study area to demolition and construction dust impacts is defined as high, medium and low (**Table 3.2**), taking into account professional judgement.

Table 3.1: Criteria for Dust Emission Magnitude

Dust Emission Magnitude	Activity
Large	**Demolition** >50,000 m^3 building demolished, dusty material (i.e. concrete), on-site crushing/screening, demolition >20 m above ground level
	Earthworks >10,000 m^2 site area, dusty soil type (i.e. clay), >10 earth moving vehicles active simultaneously,

Dust Emission Magnitude	Activity
	>8 m high bunds formed, >100,000 tonnes material moved
	Construction >100,000 m^3 building volume, on site concrete batching, sandblasting
	Trackout >50 HDVs out / day, dusty soil type (i.e. clay), >100 m unpaved roads
Medium	**Demolition** 20,000 – 50,000 m^3 building demolished, dusty material (i.e. concrete) 10 – 20 m above ground level
	Earthworks 2,500 – 10,000 m^2 site area, moderately dusty soil (i.e. silt), 5 – 10 earth moving vehicles active simultaneously, 4 m – 8 m high bunds, 20,000 - 100,000 tonnes material moved
	Construction 25,000 – 100,000 m^3 building volume, on site concrete batching
	Trackout 10 - 50 HDVs out / day, moderately dusty surface material, 50 – 100 m unpaved roads
Small	**Demolition** <20,000 m^3 building demolished, non-dusty material, <10 m above ground level, work in winter
	Earthworks <2,500 m^2 site area, non-dusty soil, <5 earth moving vehicles active simultaneously, <4 m high bunds, <20,000 tonnes material moved
	Construction <25,000 m^3, non-dusty material
	Trackout <10 HDVs out / day, non-dusty soil, < 50 m unpaved roads

Table 3.2: Area Sensitivity Definitions

Area Sensitivity	People and Property Receptors	Ecological Receptors
High	>100 dwellings, hospitals, schools, care homes within 50 m 10 – 100 dwellings within 20 m Museums, car parks, car showrooms within 50 m PM_{10} concentrations approach or are above the daily mean objective.	National or Internationally designated site within 20 m with dust sensitive features / species present
Medium	>100 dwellings, hospitals, schools, care homes within 100m 10 – 100 dwellings within 50 m < 10 dwellings within 20 m Offices/shops/parks within 20 m PM_{10} concentrations below the daily mean objective.	National or Internationally designated site within 50 m with dust sensitive features / species present Nationally designated site or particularly important plant species within 20 m
Low	>100 dwellings, hospitals, schools, care homes 100 –350 m away 10 – 100 dwellings within 50 – 350 m < 10 dwellings within 20 – 350 m Playing fields, parks, farmland, footpaths, short term car parks, roads, shopping streets PM_{10} concentrations well below the daily mean objective.	Nationally designated site or particularly important plant species 20 – 50 m Locally designated site with dust sensitive features within 50 m

3.2.7 Based on the dust emission magnitude and the area sensitivity, the risk of dust impacts is then determined (**Table 3.3**), taking into account professional judgement.

Table 3.3: Risk of Dust Impacts

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

3.2.1 Based on the risk of dust impacts, appropriate mitigation is selected using professional judgement.

Significance Criteria

3.2.2 The construction impact significance criteria are based on the SPG on 'The control of dust and emissions during construction and demolition'. The guidance recommends that no assessment of the significance of effects is made without mitigation in place, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations.

3.2.3 With appropriate mitigation in place, the residual effect of construction impacts on air quality is assessed as being not significant.

4 Baseline Conditions

4.1 LAQM

4.1.1 LBC has investigated air quality within its area as part of its responsibilities under the LAQM regime, and the whole borough has been declared as AQMA due to exceedances of NO_2 objectives.

4.2 Monitoring

Nitrogen Dioxide (NO_2)

4.2.1 LBC carried out monitoring of NO_2 concentrations at a number of locations across the borough. The most representative and closest NO_2 monitoring locations for the proposed development are described below and shown in **Figure 1**. Data for these sites are presented in **Table 4.1** and **Table 4.2**.

Table 4.1: Measured NO_2 Concentrations

Site ID	Site Type	Within AQMA	Annual Mean (µg/m^3)				
			2012	2013	2014	2015	2016
Automatic Monitoring Site							
LB (London Bloomsbury)	UB	Y	**55**	**44**	**45**	**48**	**42**
CD9 (Euston Road)	R	Y	**106**	**106**	**98**	**90**	**88**
Non-Automatic Monitoring Sites							
CA4 (Euston Road)	R	Y	**82**	**108**	**90**	**87**	**83**
CA6 (Wakefield Gardens)	UB	Y	39	**40**	36	36	31
CA10 (Tavistock Gardens)	UB	Y	**40**	**49**	**47**	**45**	**40**
CA20 (Brill Place)	R	Y	**50**	**49**	**52**	**49**	**48**
Objective			**40**				

UB = Urban Background ; R = Roadside
Exceedance of the NO_2 annual mean AQO of 40 µgm-3 are shown in **bold**.
NO_2 annual means in excess of 60 µg/m^3, indicating a potential exceedance of the NO_2 hourly mean AQS objective are shown in **bold** and underlined.
Monitoring data has been taken from the most recent LBC's Air Quality Annual Status Report available (2017)

Table 4.2: Measured Exceedances of the Hourly Mean NO_2 Objective

Site ID	Number of Hours >200µg/m^3				
	2012	2013	2014	2015	2016
LB (London Bloomsbury)	1	0	0	0	0
CD9 (Euston Road)	**295**	**296**	**170**	**54**	**39**
Objective	**18 times**				

Monitoring data has been taken from the most recent LBC's Air Quality Annual Status Report available (2017)
Exceedance of the NO_2 short term AQO of 200 µgm^3 over the permitted 18 days per year are shown in **bold**

4.2.2 As can be seen on **Figure 1** and **Table 4.1**, The two closest monitoring sites on the Euston Road have measured concentrations above 60 µg/m^3; however, they are not considered to be representative of the concentrations at the proposed development site. The site is located 150 m back from Euston Road and 130m back from Eversholt Street. Therefore, the concentrations at the site are more likely to be similar to the concentrations at the CA10 Tavistock Gardens (circa 450 m to the south), CA6 Wakefield Gardens (circa 750 m south-east) and CA20 Brill Place (circa 400 m north-east).

4.2.3 The concentrations at the representative monitoring locations have been below 60 µg/m^3 for the past 5 years and therefore, unlikely to exceed the short-term objectives as applicable for an office building.

Particulate Matter (PM_{10} and $PM_{2.5}$)

4.2.4 The results of the PM_{10} monitoring in the vicinity of the site is shown in **Table 4.3** below. There is no $PM_{2.5}$ monitoring carried out in proximity to the site.

Table 4.3: Measured PM_{10} Concentrations

Site ID	Site Type	2012	2013	2014	2015	2016
Annual Mean PM_{10} (µg/m^3)[(a)]						
LB (London Bloomsbury)	UB	19	18	20	22	20
CD9 (Euston Road)	R	-	-	29	18	24
Objective	**40**					
Number of days > 50µg/m^3						
LB (London Bloomsbury)	UB	10	4	11	6	9
CD9 (Euston Road)	R	-	-	5	5	10
Objective	**35**					

Monitoring data has been taken from the most recent LBC's Air Quality Annual Status Report available (2017)

4.2.5 Measured PM_{10} concentrations have been below the relevant objectives in the past 5 years at both automatic monitoring stations.

4.3 Background Concentrations

4.3.1 In addition to these measured concentrations, estimated background concentrations for the site have been obtained from the national maps provided by Defra (Defra, 2015). The Defra dataset shows higher concentrations than the Bloomsbury automatic urban monitoring site for 2016 (**Table 4.4). T**he Defra data for the site is therefore likely to be conservative.

Table 4.4: Estimated Annual Mean Background Concentrations

Location	Year	Annual Mean (µg/m^3)			
		NO_x	NO_2	PM_{10}	$PM_{2.5}$
Bloomsbury (538_182)	2016	-	45.0	21.2	-
Site (529_182)	2018	71.9	41.4	20.6	12.9
Objectives		**-**	**40**	**40**	**25**

4.3.2 The background concentrations at the proposed development site for NO_2 exceed the long-term objectives for NO_2, but are unlikely to exceed the short-term objectives for NO_2, and far below the objectives for PM_{10} and $PM_{2.5}$.

5 Impact Assessment

5.1 Construction Impacts

5.1.1 The main potential effects during construction are dust deposition and elevated PM_{10} concentrations. The following activities have the potential to cause emissions of dust:

- Site preparation including delivery of construction material, erection of fences and barriers;
- Demolition of existing buildings on site;
- Earthworks including digging foundations and landscaping;
- Materials handling such as storage of material in stockpiles and spillage;
- Construction and fabrication of units; and
- Disposal of waste materials off-site.

5.1.2 Typically, the main cause of unmitigated dust generation on construction sites is from demolition and vehicles using unpaved haul roads, and off-site from the suspension of dust from mud deposited on local roads by construction traffic. The main determinants of unmitigated dust annoyance are the weather and the distance to the nearest receptor.

5.1.3 Based on the SPG on 'The control of dust and emissions during construction and demolition' criteria (**Table 3.1**), the risk of dust emissions is considered to be small. The study area is considered to be of medium sensitivity (**Table 3.2**), as there are more than 10 dwellings within 20 m. Appropriate mitigation corresponding to a low risk site is therefore required during the demolition and construction phase (**Table 3.3**) (see **paragraph 6.1.1**). With appropriate mitigation in place the construction impacts are described as not significant.

5.2 Site Suitability

5.2.1 Measured NO_2 concentrations at the representative monitoring locations have been below 60 µg/m^3 over the period 2012 – 2016 (**Table 4.1**). Mapped background concentrations are also below 60 µg/m^3 (**Table 4.4**). Air quality within the development site is unlikely to exceed hourly objectives and therefore the site is suitable for the proposed office use.

5.3 Cumulative Impacts

5.3.1 As the proposed development, will not generate any traffic or have energy centre emissions, there will be no cumulative impacts associated with the emissions from the development.

5.3.2 In terms of construction, there is potential for other nearby developments to be under construction at the same time as the proposed development. However, each development will follow the required set of mitigation measures secured through a construction management plan. This will result in no off-site construction dust impact for each development. Therefore, the cumulative construction impacts will not be significant.

6 Mitigation

6.1 Construction

6.1.1 The following standard low risk mitigation measures from the SPG on 'The control of dust and emissions during construction and demolition' are recommended. An Air Quality and Dust Management Plan should be submitted to the Local Authority prior to works commencing on site.

Communication

- Display the name and contact details of persons accountable on the site boundary.
- Display the head or regional office information on the site boundary.

Management

- Develop and implement a dust management plan.
- Record all dust and air quality complaints, identify causes and take measures to reduce emissions.
- Record exceptional incidents and action taken to resolve the situation.
- Carry out regular site inspections to monitor compliance with the dust management plan and record results.
- Increase site inspection frequency during prolonged dry or windy conditions and when activities with high dust potential are being undertaken.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary at least as high as any stockpile on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site run off of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove potentially dusty materials from site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles comply with the London Low Emission Zone and the NRMM standards, where applicable.
- Ensure all vehicles switch off engines when stationary.
- Avoid the use of diesel or petrol powered generators where possible.
- Only use cutting, grinding and sawing equipment with dust suppression equipment.

- Ensure an adequate supply of water on site for dust suppressant.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use water sprays on such equipment where appropriate.
- Ensure equipment is readily available on site to clean up spillages of dry materials.
- No on-site bonfires and burning of waste materials on site.

Demolition

- Incorporate soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure water suppression is used during demolition operation.
- Avoid explosive blasting, using appropriate manual and mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless required for a particular process.

Trackout

- Use water assisted dust sweepers on the site access and local roads.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials.
- Record inspection of on-site haul routes and any subsequent action, repairing as soon as reasonably practicable.

6.2 Operation

6.2.1 No specific mitigation is required for the proposed development as pollutant concentrations within the site are below the short-term objectives.

7 Conclusions

7.1.1 The air quality impacts associated with a proposed office building of the site at Churchway, London Borough of Camden have been assessed.

7.1.2 As the development will not generate any traffic and there will not be an energy centre, it will comply with the requirements to be 'Air Quality Neutral' as specified in the local policy, including the London Plan and relevant SPG.

7.1.3 The demolition and construction works have the potential to create dust. During demolition and construction, it is recommended that a package of mitigation measures is put in place to minimise the low risk of elevated PM_{10} concentrations and dust nuisance in the surrounding area. With mitigation in place the construction impacts are judged as being not significant.

7.1.4 Air Quality within the site is suitable for use as an office building without the need for specific mitigation against poor air quality.

7.1.5 The requirements of the Air Quality SPD, the London Plan and National and European policies are met. It is therefore concluded that there are no air quality constraints to the proposed office building development.

Appendix A Glossary

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
ADMS	Air Dispersion Modelling System
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
BEB	Building Emission Benchmark
CAZ	Central Activity Zone
CHP	Combined Heat and Power
DEFRA	Department for Environment, Food and Rural Affairs
Diffusion Tube	A passive sampler used for collecting NO_2 in the air
EC	European Commission
EFT	Emission Factor Toolkit
EPUK	Environmental Protection UK
GIA	Gross Internal Area
GLA	Greater London Authority
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes, includes Heavy Goods Vehicles and buses
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LBC	London Borough of Camden
LEZ	Low Emission Zone
LGV	Light Good Vehicle
NAQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NO_2	Nitrogen Dioxide

Abbreviations	Meaning
NO_X	Nitrogen oxides, generally considered to be nitric oxide and NO_2. Its main source is from combustion of fossil fuels, including petrol and diesel used in road vehicles
NPPF	National Planning Policy Framework
NRMM	Non-road mobile machinery
PM_{10}	Small airborne particles less than 10 µm in diameter
PBA	Peter Brett Associates LLP
PPG	Planning Practice Guidance
Receptor	A location where the effects of pollution may occur
SPG	Supplementary Planning Guidance
SQM	Square Metres
TEB	Transport Emission Benchmark

Appendix B References

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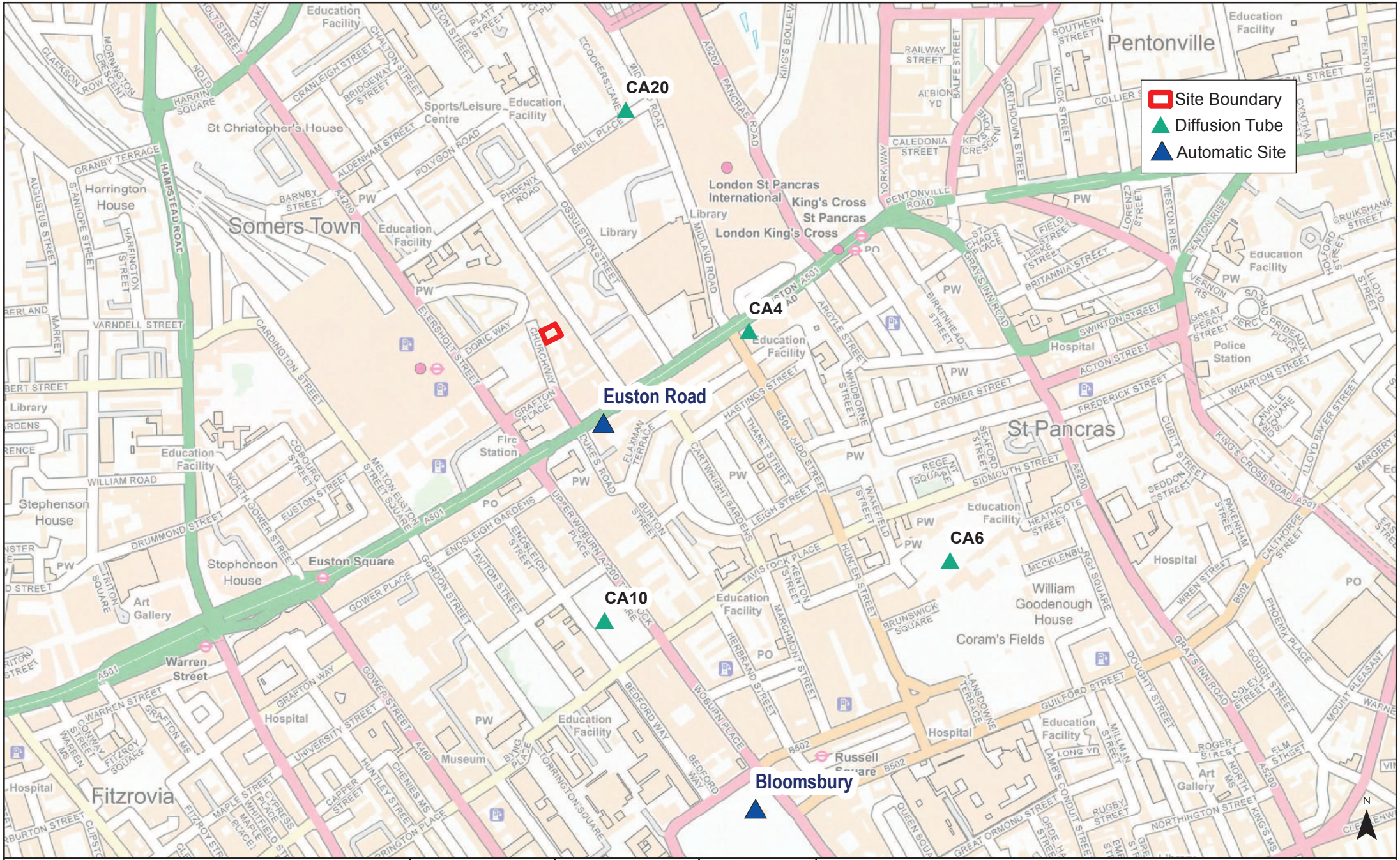
Appendix C Figures



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Site Boundary and Monitoring Locations

Figure 1 | Rev A