373-375 Euston Road (Cambridge House)

Air Quality Assessment

December 2017

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Comments

Comments

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Contents

Figures

Tables

Appendices

Executive Summary

This Air Quality Statement has been prepared by Waterman on behalf of Birkbeck, University of London to accompany a Planning Application for the redevelopment of Cambridge House, 373-375 Euston Road, London.

The proposal is for the change of use of the existing Site to Class D1; restoration and enhancement of the existing early twentieth century building; and the construction of a rooftop lecture facility.

The main likely effects on local air quality during construction relates to nuisance dust. A range of mitigation measures to minimise or prevent dust emissions would be implemented through the construction works, this would ensure that the effects would be insignificant at all receptor locations.

It is anticipated that the effect of construction vehicles entering and egressing the Site during the construction period would be insignificant, in the context of local background pollutant concentrations.

All construction plant now need to comply with the London Low Emission Standards set out for Non-Road Mobile Machinery, as such it is considered that no significant effects are predicted for construction plant and therefore the likely effect on local air quality would be insignificant.

Given the Development would be 'car free'; emissions generated from the proposed boiler meet relevant emission levels**;** and the diesel generator is for emergency use only, the Development is not expected to give rise to air quality impacts. As such the likely effect on local air quality would be insignificant and the operational phase of the Development has not been considered further.

In accordance with LLAQM.TG(16), only the short-term Air Quality Strategy (AQS) objectives apply for future users of the Development. Based on the results from the nearest monitoring to the Site it is considered that the short-term AQS objective for particulates is likely to be met for future users of the academic facility, however, the nitrogen dioxide (NO_2) 1-hour mean AQS objective is unlikely to be met. To minimise the exposure of future users to exceedances of the 1-hour mean NO_2 AQS objective, mitigation measure in the form of mechanical ventilation, heat recovery, by drawing air from the roof to ventilate the building is proposed. Following the provision of mechanical ventilation, the introduction of academic users is therefore considered insignificant.

1. Introduction

1.1. This Air Quality Statement has been prepared by Waterman Infrastructure & Environment Ltd (hereafter referred to as 'Waterman') on behalf of Birkbeck, University of London (the Applicant) to accompany the Planning Application for the redevelopment of Cambridge House, 373-375 Euston Road, London (hereafter referred to as the 'Site').

1.2. The redevelopment of the Site includes the change of use of the existing Site to Class D1; restoration and enhancement of the existing early twentieth century building; and the construction of a rooftop lecture facility.

1.3. The Site is approximately 380m^2 in area, centred on Ordnance Survey Grid Reference 528964,182170. The Site is bound to the north by Euston Road; to the west by Cleveland Street; to the south by Warren Street and to the east by office and commercial buildings. The area surrounding the Site is predominantly occupied by existing commercial uses, with the nearest residential receptors located within 20m of the Site, located on the opposite side of Cleveland Street. Additionally, the Portland Hospital and Regents Park (a Site of Metropolitan Importance for Nature Conservation) are located approximately 100m south-west and 200m northwest of the Site respectively.

1.4. The Site is located within the administrative area of London Borough of Camden (LBC). LBC has designated an Air Quality Management Area (AQMA) for exceedences of the annual mean nitrogen dioxide (NO_2) Air Quality Strategy (AQS) objective and the 24-hour mean particulate matter (PM_{10}) AQS objective attributed to vehicle emissions. The AQMA covers the whole Borough. Consequently, the Site is located within this AQMA.

1.5. The Development would not provide any car parking spaces and would not increase the number of vehicle trips associated with the existing Site. Additionally, the proposed boiler would be unlikely to give rise to impacts as it would meet current air quality emission standards. A diesel generator is proposed for safety purposes and would only be used during an emergency (such as to provide power for the firefighting shaft vent and to the lighting and evacuation lift).

1.6. Given the Development would be 'car free'; the proposed boiler will meet current emission standards and the diesel generator is for emergency use only, the operational Development would be unlikely to give rise to impacts. Further details of the operational phase are set out in Section 6.

1.7. The purpose of the air quality assessment is to assess the potential effect of the Development on local air quality during construction and to qualitatively consider the potential air quality concentrations future users of the Development would be exposed to.

1.8. Section 2 of this report gives a summary of legislation, planning policy, and guidance relevant to air quality. Section 3 provides a summary of the baseline conditions. The qualitative construction assessment is presented in Section 5 and Section 6 describes the operational impacts. A summary of the main findings and conclusions of the assessment is given in Section 7.

2. Air Quality Legislation, Planning Policy and Guidance

Legalisation

European Legalisation

EU Framework Directive 2008/50/EC, 2008

2.1. Air pollutants at high concentrations can give rise to adverse effects on the health of humans and ecosystems. European Union (EU) legislation on air quality forms the basis for national UK legislation and policy on air quality.

2.2. The EU Framework Directive 2008/50/EC[1] on ambient air quality assessment and management came into force in May 2008 and was implemented by Member States, including the UK, by June 2010. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.

National Legislation

Air Quality Standards Regulations, 2010

2.3. The Air Quality Standards Regulations[2] implement Limit Values prescribed by the EU Framework Directive 2008/50/EC. The Limit Values are legally binding and the Secretary of State, on behalf of the UK Government, is responsible for the implementation.

The UK Air Quality Strategy, 2007

2.4. The current UK Air Quality Strategy (UK AQS), which was published in July 2007[3], sets out the objectives for Local Planning Authorities (LPA) in undertaking their Local Air Quality Management (LAQM) duties. The 2007 UK AQS introduced a national level policy framework for exposure reduction for fine particulate matter. Objectives in the UK AQS are in some cases more onerous than the Limit Values set out within the relevant EU Directives and the Air Quality Standards Regulations 2010[4]. In addition, objectives have been established for a wider range of pollutants.

2.5. The UK AQS objectives of air pollutants relevant to this assessment are summarised in **Table 1**.

1 Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.
2 Defra, 2010, The Air Quality Standards (England) Regulations.
3 Defra, 2007. 'The Air Quality Strategy for England, Scotland, Wales & Northern Ireland'
4 Secretary of State, 2010. The Air Quality Standards Regulations 2010

Table 1: Summary of Relevant AQS Objectives

Pollutant	Objective		Date by which Objective to be Met
	Concentration	Measured as:	
Nitrogen Dioxide (NO_2)	200µg/m^3	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg/m^3	Annual Mean	31/12/2005
Particulate Matter (PM_{10})[(a)]	50µg/m^3	24 hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg/m^3	Annual Mean	31/12/2004
Particulate Matter ($PM_{2.5}$)[(b)]	Target of 15% reduction in concentrations at urban background locations	Annual Mean	Between 2010 and 2020
	25µg/m^3	Annual Mean	01/01/2020

Note: (a) Particulate matter with a mean aerodynamic diameter less than 10 microns (or micrometres – µm)
(b) Particulate matter with a mean aerodynamic diameter less than 2.5 microns

The Environment Act 1995

2.11. In a parallel process, the Environment Act 1995[5] required the preparation of a national air quality strategy setting health-based air quality objectives for specified pollutants and outlining measures to be taken by LPAs in relation to meeting these objectives (the LAQM system).

2.12. Part IV of the Environment Act 1995 provides a system of LAQM under which LPAs are required to review and assess the future quality of the air in their area by way of a staged process. Should this process suggest that any of the AQS objectives will not be met by the target dates, the LPA must consider the declaration of an Air Quality Management Area (AQMA) and the subsequent preparation of an Air Quality Action Plan (AQAP) to improve the air quality in that area in pursuit of the AQS objectives.

Planning Policy

National Planning Policy

National Planning Policy Framework, 2012

2.13. Paragraph 109 of the National Planning Policy Framework (NPPF)[6] identifies that the planning system should aim to conserve and enhance the natural and local environment by…"*preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of land, air, water or noise pollution or land instability*."

2.14. Furthermore, paragraph 124 states "*planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from*

5 Office of the Deputy Prime Minister (ODPM), 1995, 'The Environment Act' 1995.
6 Department for Communities and Local Government, 2012, 'National Planning Policy Framework'. DCLG, London.

individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan".

Regional Planning Policy

The London Plan - The Spatial Development Strategy for Greater London; consolidated with alterations since 2011, 2016

2.15. Policy 7.14 'Improving air quality' of the London Plan[7] states that development proposals should:

"A. minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3);

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

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

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

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

A City for all Londoners, 2016

2.16. The Mayor of London's A City for All Londoners[8] document outlines the challenges and opportunities across priority policy areas in London, as well as the changes that City Hall wants to deliver over the next four years to improve air quality. The Mayor is committed to improving air quality through the design of 'Healthy Streets'. Such measures detailed include:

- Introducing an emissions surcharge (or 'Toxicity Charge') in 2017 for high-polluting older vehicles in central London;
- Introducing a Central-London Ultra-Low Emission Zone (ULEZ) in 2019 and potentially enlarging the area it covers, up to the North and South Circular Roads for all vehicles and London wide for the most polluting heavy vehicles. The new ULEZ would incorporate the J1/M1;
- Replace diesel buses with green buses (hybrid or zero emission) this includes a retrofit scheme of 3000 buses outside central London by 2020;
- All buses in central London to be 'Euro 6' hybrid by 2019;
- All new buildings in London to be air quality positive to include reducing emissions and associated exposure;

7 Greater London Authority (2016): The 2015 London Plan with Minor Alterations 2016,Spatial Development Strategy for Greater London, GLA, London.
8 Mayor of London (2016) A City for All Londoners, London

- Planting trees on a busy road to provide a buffer between pedestrians and traffic, as well as absorbing pollutants to improve air quality; and
- Increase the use of cycling and walking.

Local Planning Policy

London Borough of Camden Local Plan, 2017

2.17. The Local Plan[9] forms the basis for planning decisions and future development in the borough. Policy CC4 Air quality of the Local Plan states:

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

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

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

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

Guidance

Improving Air Quality in the UK: Tackling Nitrogen Dioxide in our Towns and Cities. Draft UK Air Quality Plan for Tackling Nitrogen Dioxide.

2.18. An EU Court ruling (November, 2016) in relation to the ClientEarth case[10] regarding the UK's continued breach of legal air quality limits, has resulted in the Government being ordered by the High Court to revise the air quality improvement plan to meet compliance for NO_2 in the UK. This document was adopted in July 2017[11].

2.19. The revised plan focuses on reducing concentrations of NO_x and NO_2 around road vehicle emissions within the shortest possible time. With the principal aims to:

a. reduce emissions of NOx from the current road vehicle fleet in problem locations now; and

b. accelerate road vehicle fleet turnover to cleaner vehicles to ensure that the problem remains addressed and does not move to other locations.

2.20. The other aims include reducing background concentrations of NO_x from:

- Other forms of transport such as rail, aviation and shipping;

[9] LBC, 2017, Camden Local Plan, adopted June 2017
10 https://www.judiciary.gov.uk/judgments/clientearth-v-secretary-of-state-for-the-environment-food-and-rural-affairs/
11 Defra (2017) Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities. Draft UK Air Quality Plan for Tackling Nitrogen Dioxide

- Industry and non-road mobile machinery; and
- Buildings, both commercial and domestic, and other stationary sources.

2.21. The Consultation Document, provided additional measures to reduce NO_x and NO_2 concentrations in the UK, further than the measures detailed in the adopted 2016 Plan. Such measures include:

- Mandate local authorities to implement Clean Air Zones within the shortest possible time;
- Consultation on proposal for a Clean Air Zone Framework for Wales;
- Consultation on a draft National Low Emission Framework for Scotland;
- Commitment to establishing a Low Emission Zone for Scotland by 2018;
- Tackling air pollution on the English Road network;
- New real driving emissions requirement to address real world NOx emissions;
- Additional funding to accelerate uptake of hydrogen vehicles and infrastructure;
- Additional funding to accelerate the uptake of electric taxis;
- Further investment in retrofitting alongside additional support of low emission buses and taxis;
- Regulatory changes to support the take up of alternatively fuelled light commercial vehicles;
- Exploring the appropriate tax treatment for diesel vehicles;
- Call for evidence on updating the existing HGV Road User Levy;
- Call for evidence on use of red diesel;
- Ensure wider environmental performance is apparent to consumers when purchasing cars;
- Updating Government procurement policy;
- New emissions standards for non-road mobile machinery;
- New measures to tackle NOx emissions from Medium Combustion Plants; and
- New measures to tackle NOx emissions from generators.

2.22. The above draft measures do not provide any actions which are relevant to the operation or design of the Development.

The Clean Growth Strategy, 2017

2.23. The Clean Growth Strategy[12] sets out the UK Government's policy to reduce greenhouse gas emissions to protect the climate and environment whilst not restricting business and economic growth. Whilst not directly created to improve air quality, the measures proposed have an subsequent benefit to improving ambient air. Several policy measures are proposed under key policy headings. The key policy headings relevant to air quality included in The Clean Growth Strategy include:

- Accelerating clean growth;
- Improving business and industry efficiency – 25% of UK emissions;
- Improving our homes – 13% of UK emissions;
- Accelerating the shift to low carbon transport – 24% of UK emissions;
- Delivering clean, smart flexible power – 21% of UK emissions;
- Enhancing the benefits and value of our natural resources – 15% of UK emissions;

[12] HM Government (2017) The Clean Growth Strategy – Leading the Way to Low Carbon Future, October 2017

- Leading in the public sector – 2% of UK emissions; and
- Government leadership in driving clean growth.

Planning Practice Guidance, 2014

2.24. The Government's online Planning Practice Guidance[13] (PPG) states that air quality concerns are more likely to arise where development is proposed within an area of existing poor air quality, or where it would adversely impact upon the implementation of air quality strategies and / or action plans. The PPG notes that when deciding whether air quality is relevant to a planning application, considerations would include whether the development would lead to:

- Significant effects on traffic, such as volume, congestion, vehicle speed, or composition;
- The introduction of new point sources of air pollution, such as furnaces, centralised boilers and Combined Heat and Power (CHP) plant; and
- Exposing occupants of any new developments to existing sources of air pollutants and areas with poor air quality.

Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017

2.25. Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) Guidance[14] provide guidance for air quality considerations within local development control processes; promoting a consistent approach to the treatment of air quality issues.

2.26. The EPUK and IAQM guidance explains how development proposals could adopt good design principals to reduce emissions and contribute to better air quality. The guidance also provides a method for screening the need for an air quality assessment and a consistent approach for describing the effects at individual receptors.

2.27. The EPUK and IAQM Guidance advises that:

"*In arriving at a decision about a specific proposed development the local planning authority is required to achieve a balance between economic, social and environmental considerations. For this reason, appropriate consideration of issues such as air quality, noise and visual amenity is necessary. In terms of air quality, particular attention should be paid to:*

- *Compliance with national air quality objectives and of EU Limit Values;*
- *Whether the development will materially affect any air quality action plan or strategy;*
- *The overall degradation (or improvement) in local air quality; or*
- *Whether the development will introduce new public exposure into an area of existing poor air quality.*"

The Mayor's Air Quality Strategy 'Clearing the Air', 2010

2.28. The Greater London Authority (GLA) Act 1999[15] required the GLA to produce an Air Quality Strategy (AQS) for Greater London that sets out air quality objectives (to be no less than national objectives) and present measures that the Mayor, GLA and London Boroughs will take towards

13 DCLG (2014), 'Planning Practice Guidance: Air Quality (ID 32)' (06 March 2014).
14 Environmental Protection UK & Institute of Air Quality Management (IAQM) (2017), 'Land-use Planning & Development Control: Planning for Air Quality.' January 2017. IAQM, London
15 Greater London Authority (GLA) (1999) 'Greater London Authority Act 1999' London, 1999.

meeting these objectives. The Mayor's AQS[16] aims to improve air quality within London by targeting the reduction of emissions related to transport and construction. Some of the initiatives proposed include:

- targeted measures for areas with poor air quality; and
- use of the planning system to reduce air pollutant emissions from new developments.

Mayor of London's Supplementary Planning Guides: Sustainable Design and Construction, 2014

2.29. The 'Sustainable Design and Construction' Supplementary Planning Guidance[17] (SPG) provides guidance to support the implementation of the London Plan.

2.30. Section 4.3 of the SPG focusses on air pollution and the effects from the construction and operation of new developments to ensure that they are 'air quality neutral'. Emission benchmarks are provided within the SPG for:

- emissions from buildings; and
- transport emissions.

Mayor of London: 'The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance', 2014

2.31. The 'Control of Dust and Emissions during Construction and Demolition' SPG[18] seeks to reduce emissions of dust, PM_{10} and $PM_{2.5}$ from construction and demolition activities in London. It also aims to manage emissions of NO_X from construction and demolition machinery by means of a new non-road mobile machinery Ultra-Low Emissions Zone (ULEZ). The SPG provides guidance on the implementation of London Plan Policy 7.14 – 'Improving Air Quality', as well as a range of policies that deal with environmental sustainability, health and quality of life.

London Local Air Quality Management Policy Guidance (LLAQM.PG (16)), 2016

2.32. The Local Air Quality Management Policy Guidance LLAQM.PG (16)[19] provides additional guidance on the links between transport and air quality. LLAQM.PG (16) describes how road transport contributes to local air pollution and how transport measures may bring improvements in air quality. Key transport-related Government initiatives are set out, including regulatory measures and standards to reduce vehicle emissions and improve fuels, tax-based measures and the development of an integrated transport strategy.

2.33. LLAQM.PG (16) also provides guidance on the links between air quality and the land use planning system. The guidance advises that air quality considerations should be integrated within the planning process at the earliest stage, and is intended to aid local authorities in developing action plans to deal with specific air quality issues and create strategies to improve air quality. LLAQM.PG (16) summarises the means in which the land use planning system can help deliver compliance with the air quality objectives.

16 Greater London Authority (2010), 'Clearing the air – The Mayor's Air Quality Strategy', GLA, London.
17 Greater London Authority (2014), 'Sustainable Design and Construction - Supplementary Planning Guidance', Greater London Authority, London.
18 Mayor of London (2014) 'The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance'
19 Defra (2016), 'London Local Air Quality Management (LLAQM) Policy guidance 2016 (LLAQM.PG (16))', DEFRA, London.

Institute of Air Quality Management: Guidance on the Assessment of Dust from Demolition and Construction, 2014

2.34. The IAQM Construction Dust Guidance[20] provides guidance to consultants and Environmental Health Officers (EHOs) on how to assess air quality effects from construction related activities. The guidance provides a risk based approach based on the potential dust emission magnitude of the site (small, medium or large) and the sensitivity of the area to dust effects. The importance of professional judgement is noted throughout the guidance. The guidance recommends that once the risk class of the site has been identified, the appropriate level of mitigation measures is implemented to ensure that the construction activities have no significant effects.

London Borough of Camden Air Quality Action Plan, 2016-2018

2.35. The LBC Air Quality Action Plan (AQAP), Camden's Clean Air Action Plan 2016-2018[21] aims to continue to reduce concentrations of PM_{10} and $PM_{2.5}$, and to meet the EU Objective for NO_2. The key objectives of the plan are to:

- *"Encourage reductions in fossil fuel use, the adoption of clean fuels and low emission technology and promote energy efficiency;*
- *Raise awareness about air quality in Camden and promote lifestyle changes which can help reduce levels of air pollution and minimise exposure to air pollution;*
- *Improve the health and well-being of the local population, including those that work and visit Camden;*
- *Work in partnership with national and regional bodies, and with local public and private organisations, to foster and drive improvements in air quality;*
- *Lead by example and reduce NO_2 and PM_{10} emissions associated with the Council's own buildings and transport services; and*
- *Ensure actions which serve to reduce NO_2 and PM_{10} emissions complement actions to mitigate CO_2 emissions."*

London Borough of Camden Guide for Contractors Working in Camden, 2008

2.36. LBC have produced a guide[22] to reduce disturbances due to dust and smoke arising from demolition and construction work on all building sites within the Borough. The document sets out Best Practicable Means (BPM) to mitigate dust emissions from construction sites these include:

"a. Carry out demolition and construction work in accordance with the Best Practise Guidance Note 'The control of dust and emissions from construction and demolition' (2006). This outlines BPM to effectively manage construction work in order to mitigate air pollution emissions.

b. When carrying out demolition or construction work during periods of dry or windy weather, there can often be dust problems on sites bordered by homes. You must take measures to reduce the formation and spread of dust. You must control dust at source by using a continuous fine-water spray. You must provide a suitable water supply, and make sure there are enough hoses to reach all parts of the site and a way of getting rid of wastewater.

20 Institute of Air Quality Management (2014) 'Guidance on the Assessment of dust from demolition and construction.'
21 LBC, 2013, 'Camden's Clean Air Action Plan 2016-2018'
22 LBC, 2008, 'Guide for Contractors Working in Camden'

c. There must be adequate screening and damping down during all demolition activities, sandblasting, clearance work, breaking up of existing ground services and other site preparations and activities. You must use existing features of the site, such as boundary walls to provide screening where practicable.

d. You must enclose scaffolding with appropriate sheeting material.

e. You must provide easy-to-clean hard-standings for vehicles.

f. You must keep heavily used areas clean by brushing vehicles and spraying them with water regularly.

g. You must control the cutting or grinding of materials on the site.

i. Buildings or structures that are being demolished, or small areas of land that are being prepared for development must be damped down using high-pressure hoses.

k. On sites where a large amount of dust has been produced and is laying on the ground, you must use a specialist vehicle to remove dust (by vacuuming) before you damp down the site.

l. Major haul routes on the site must be watered as necessary to reduce dust. Where practical, you must compact the route to reduce the amount of soil and other material that is moved around the site. This applies especially near to exits. If machinery movements produce dust, you must set effective speed limits and reschedule work if necessary. If the development involves machinery moving across open land, you must create a suitable track to reduce the amount of dust produced.

m. You must enclose materials at all times, and damp down dusty materials using water sprays during dry weather.

n. All materials that create dust, including soil, must be stored away from the site boundary, screened to prevent wind spreading the dust and damped down where practical. You will need to consider the size and shape of stockpiles to reduce dust.

o. Paved roads near to exits must be kept clean. Vehicles transporting materials onto or off the site must be suitably covered where necessary to prevent dust.

p. You must use rubble chutes and skips where appropriate. There must be an effective close-fitting cover over the skip to contain all the dust and other rubbish. The chutes must be continuous until they reach the skip, with no gaps, and maintained in good condition.

q. You must not allow rubbish and waste materials to build up on the site.

r. You must plant, turf or securely cover completed earthworks to stabilise the surface.

s. Reducing dust, fumes or other nuisance or environmental effects, which may cause offence to the local community or environment.

t. Reduce environmental effects which may cause offence to the local community by promoting proactive community relations."

Central London Air Quality Cluster Group: Cost Effective Actions to Cut Central London Air Pollution, 2012

2.37. The Central London Air Quality Cluster Group consists of the amalgamation of eight central London Boroughs, including LBC, to improve air quality within central London. The 'Cost Effective Actions to Cut Central London Air' guidance[23] provides action measures which London Boroughs can

23 Central London Air Quality Cluster Group, 2012, 'Cost Effective Actions to Cut Central London Air Pollution'

implement to improve air quality. Such measures range from business engagement, car clubs, encouraging cycling, to energy efficiency in buildings and ultra-low NO_X boilers. The following measures are applicable to the proposed Development:

- New buildings to be air quality neutral;
- New buildings to include a Level 4 BREEAM assessment; and
- Boilers are replaced by ultra-low NO_X models instead of Class 4 or 5.

3. Baseline Conditions

3.1. While the Site is in LBC, it abuts the boundary of Westminster City Council (WCC). For completeness both LBC's and WCC's Air Quality Review and Assessment Documents are presented below.

London Borough of Camden Review and Assessment Process

3.2. Between 1998 and 2001 LBC undertook the first round of Review and Assessment of air quality[24] which concluded that it was necessary to declare the whole Borough as an AQMA for the annual mean objective for NO_2 and the 24-hour mean objective for PM_{10}.

3.3. The Updating and Screening Assessments (USAs) completed in August 2003[25], 2006[26] and 2009[27] concluded that the LBC AQMA designation should remain and no further Detailed Assessment for air quality were required.

3.4. The fourth round of Review and Assessment[28] identified that Camden no longer exceeded the 24-hour mean objective for PM_{10} at three of their automatic monitoring sites. However, LBC attributed this to the change in the methodology used to measure PM_{10} concentrations rather than improvements in emissions, and therefore, the AQMA order remained unchanged.

3.5. The fourth round of Review and Assessment additionally indicated that a number of diffusion tube sites and one automatic site at roadside locations exceeded the 1-hour mean NO_2 AQS objective. LBC undertook further modelling work to understand the spatial distribution of PM_{10} and NO_2 exceedances across the Borough. The modelling revealed that a number of roads in Camden which experience high volumes of traffic and a large proportion of HGV vehicles, such as St Pancras Way adjacent to the Site, exceeded both short and long term NO_2 and PM_{10} AQS objectives.

3.6. The report published by LBC as part of the fifth round of Review and Assessment[29] confirmed that the NO_2 annual mean AQS objective was still being exceeded at all the Council's automatic monitoring sites and the vast majority of the NO_2 diffusion tube sites. Although the report confirmed that PM_{10} concentrations now meet the AQS objectives at all monitoring sites, no amendment to the AQMA order has been suggested.

3.7. The latest report[30] published by LBC and available on their website confirmed the findings of the previous rounds of review and assessment and while there has been a declining trend in NO_2 levels across the borough, most levels exceeded the annual mean objective and therefore the AQMA should be retained.

Westminster City Council Review and Assessment of Air Quality

3.8. Following WCC's first round of air quality Review and Assessment in 1998, the entire Borough was declared an AQMA for NO_2 and PM_{10} on the basis that levels of these two pollutants would not meet the annual mean AQS objectives[31]. NO_2 was predicted to exceed the annual mean objective throughout the Borough and PM_{10} was predicted to exceed the annual mean objective along major roads and in the West End.

24 LBC, June 1998, 'Statutory Review and Assessment of Air Quality in the London Borough of Camden Stages 1 and 2'
25 LBC, August 2003, 'Second Round of Review and Assessment of Air Quality: Updating and Screening Assessment'
26 LBC, August 2006, 'Third Round of Review and Assessment of Air Quality: Updating and Screening Assessment'
27 LBC, August 2009, '2009 Air Quality Updating and Screening Assessment for London Borough of Camden'
28 LBC, June 2010, '2009 Progress Report for London Borough of Camden'
29 LBC, July 2013, '2013 Air Quality Progress Report for the London Borough of Camden'
30 LBC, April 2015, '2015 Updating and Screening Assessment for London Borough of Camden'
31 Westminster City Council, 1998, 'Review and Assessment of Air Quality in Westminster'.

3.9. Since 2004, WCC has produced annual Air Quality Progress Reports[32]. The 2006 Air Quality Progress Report identified few changes in air quality in WCC with continued exceedances of the annual mean NO_2 and PM_{10} objectives[33].

3.10. An Air Quality Progress Report completed by WCC in 2008 identified widespread exceedances of the annual mean objective of 40µg/m^3, not only at roadside but also at urban background sites[34]. However, the monitoring also showed signs that NO_2 and PM_{10} concentrations were declining at Horseferry Road, although it was considered important that further monitoring be completed to confirm the trend.

3.11. The WCC 2009 Updating and Screening Assessment (USA)[35] identified exceedances in relation to annual and hourly mean NO_2 objectives from 2008 monitoring across the majority of Westminster monitoring sites. The 2010 Air Quality Progress Report[36] confirmed that widespread exceedences of the annual mean objective for NO_2 and that the hourly mean objective was also exceeded at all automatic monitoring sites except Covent Garden and London Westminster. However, the monitoring data for PM_{10} showed a continued drop in concentrations since 2008, although more than two years' of data are required before a trend can be confidently established. The WCC 2012 Progress Report[37], 2013 USA[38], 2013/14 Progress Report[39] and 2015 Progress Report[40] confirmed that exceedences of the NO_2 and PM_{10} objectives continue to be observed within the Borough.

Local Monitoring

3.12. LBC currently undertakes air quality monitoring at four automatic monitors within the Borough. The nearest monitor is the roadside Euston Road monitor located approximately 1km east of the centre of the Site. The monitoring results for NO_2 and PM_{10} at the Euston Road automatic monitor are presented in **Table 2**

Table 2: Measured Concentrations at the Euston Road Roadside Monitor

Pollutant	Averaging Period	AQS Objective	2012	2013	2014	2015	2016
NO_2	Annual Mean (µg/m^3)	40µg/m^3	**106**	**106**	**98**	**90**	**86**
	1-Hour Mean (No. of Hours)	200µg/m^3 not to be exceeded more than 18 times a year	**295**	**296**	**170**	**54**	**39**
PM_{10}	Annual Mean (µg/m^3)	40µg/m^3	-	-	32	28	24
	24-Hour Mean (No. of Days)	50µg/m^3 not to be exceeded more than 35 times a year	-	-	3	18	10

Notes: 2012-2015 Data obtained from LBC Air Quality Annual Status Report for 2015 and 2016 Data obtained from London Air (www.londonair.org.uk)
Exceedences of the AQS Objectives shown in **bold** text.

3.13. The monitoring results in **Table 2** indicate that the annual mean and hourly mean NO_2 objectives were exceeded at the Euston Road automatic monitor in all years. The PM_{10} objectives were met in all years where data was recorded.

32 Westminster City Council, 2004, 'Air Quality Progress Report 2004'
33 Westminster City Council, 2006, 'Air Quality Progress Report 2006'
34 Westminster City Council, 2008, 'Air Quality Progress Report 2008'
35 Westminster City Council, 2009, 'Updating and Screening Assessment'.
36 Westminster City Council, 2010, ' Air Quality Progress Report 2010'.
37 Westminster City Council, 2012, 'Air Quality Progress Report 2012'.
38 Westminster City Council, 2013, 'Air Quality Updating and Screening Assessment 2013'.
39 Westminster City Council, 2014, 'Air Quality Progress Report 2013/14'.
40 Westminster City Council, 2015, 'Air Quality Progress Report 2015'

3.14. WCC currently undertakes air quality monitoring at five automatic monitors within the Borough. The nearest monitor is the kerbside Marylebone Road monitor located approximately 0.9km west of the Site. The monitoring results for NO_2, PM_{10} and $PM_{2.5}$ at the Marylebone Road automatic monitor are presented in **Table 3** from 2012 to 2016.

Table 3: Measured Concentrations at the Marylebone Road Roadside Monitor

Pollutant	Averaging Period	AQS Objective	2012	2013	2014	2015	2016
NO_2	Annual Mean (µg/m^3)	40µg/m^3	**94**	**85**	**94**	**88**	**87**
	1-Hour Mean (No. of Hours)	200µg/m^3 not to be exceeded more than 18 times a year	**122**	**59**	**60**	**56**	**49**
PM_{10}	Annual Mean (µg/m^3)	40µg/m^3	38	33	31	30	29
	24-Hour Mean (No. of Days)	50µg/m^3 not to be exceeded more than 35 times a year	**48**	29	22	13	15
$PM_{2.5}$	Annual Mean (µg/m^3)	25µg/m^3	22	20	18	16	15.9

Notes: Data obtained from WCC Air Quality Annual Status Report for 2016
Exceedences of the AQS Objectives shown in **bold** text.

3.15. The monitoring results in **Table 3** indicate that the annual mean and hourly mean NO_2 objectives were exceeded at the Euston Road automatic monitor in all years. The PM_{10} and $PM_{2.5}$ objectives were met from 2013 to 2016, with an exceedance for the 24-hour mean AQS objective in 2012.

3.16. LBC also use NO_2 diffusion tubes to monitor air quality at 14 locations throughout the Borough. WCC also operated an NO_2 diffusion tube monitoring network, but monitoring ceased in March 2011. The results for the nearest NO_2 diffusion tubes (within 1km) of the Site are presented in **Table 4**.

Table 4: Measured NO_2 Concentrations at the nearest Diffusion Tubes (µg/m^3)

ID	Site	Classification	Distance to centre of Site (km)	2012	2013	2014	2015	2016
CA11	Tottenham Court Road	Kerbside	0.75	**83.30**	**88.09**	**86.75**	**85.61**	**83.57**
CA10	Tavistock Gardens	Urban Background	0.93	**40.12**	**49.37**	**46.50**	**44.57**	39.68

Notes: 2012-2015 Data obtained from LBC Air Quality Annual Status Report for 2015 and 2016 Data from:
https://opendata.camden.gov.uk/Environment/Air-Quality-Monitoring-Diffusion-Tube/gy6e-_i4w6/data#SaveAs
Exceedences of the AQS Objectives shown in **bold** text.

3.17. The results in **Table 4** show that the annual mean NO_2 AQS objective of 40µg/m^3 is exceeded at the Tottenham Court kerbside location between 2012 and 2016. The urban background diffusion tubes of Tavistock Gardens, show exceedences during the period 2011 to 2015. The results from the diffusion tubes show a year on year decline at all the monitoring sites from 2013.

3.18. The results in **Table 4** show the main contribution to air quality in the City is from roads traffic emissions. At monitoring locations, away from main roads air quality concentrations improve.

Defra Air Quality Background Maps

3.19. In addition to the urban background monitoring undertaken by LBC, background concentrations of NO_x, NO_2, PM_{10} and $PM_{2.5}$ are available from the Defra Air Quality Archive for 1 x 1km grid squares for assessment years between 2013 and 2030. **Table 5** presents the Defra background concentrations for the year 2016 for the grid square the Site is located within (528500, 182500).

Table 5: Defra Background Map in 2016 for the Grid Square at the Location of the Site

Pollutant	Annual Mean Concentration (µg/m^3)	AQS Objective
NO_x	66.4	-
NO_2	**38.3**	40µg/m^3
PM_{10}	21.5	40µg/m^3
$PM_{2.5}$	15.2	-

3.20. The data in **Table 5** shows that the 2016 Defra Background Maps are below the respective AQS objectives. The Defra background map annual mean NO_2 concentration (of 38.3µg/m^3) is similar to the monitored concentration at Tavistock Gardens (44.57µg/m^3 in 2015 and 39.88µg/m^3 in 2016).

4. Demolition and Construction Phase Qualitative Assessment

Assessment Methodology

Dust Emissions

4.1. The effects of dust emissions from the construction phase has been based on the Mayors 'The Control of Dust and Emissions during Construction and Demolition SPG', which takes account of the guidance published by the IAQM.

4.2. The approach to the assessment includes:

- consideration of planned construction activities and their phasing; and
- a review of the sensitive uses in the area immediately surrounding the Site in relation to their distance from the Site.

4.3. Following the Mayors SPG, construction activities can be divided into the following four distinct activities:

- Demolition – any activity involved in the removal of an existing building;
- Earthworks – the excavation, haulage, tipping and stockpiling of material, but may also involve levelling the site and landscaping;
- Construction – any activity involved with the provision of a new structure; and
- Trackout – the movement of vehicles from unpaved ground on a site, where they can accumulate mud and dirt, onto the public road network where dust might be deposited.

4.4. The Mayors SPG considers three separate dust effects, with the proximity of sensitive receptors being taken into consideration for:

- annoyance due to dust soiling;
- potential effects on human health due to significant increase in exposure to PM_{10}; and
- harm to ecological receptors.

4.5. To determine the risk of the construction phase, the following four step process, as set out in Table 6, has been undertaken.

Table 6: Summary of the Mayors SPG for Undertaking a Construction Dust Assessment

Step	Description
1 Screen the Need for a Detailed Assessment	Simple distance based criteria are used to determine the requirement for a detailed dust assessment. An assessment will normally be required where there are 'human receptors' within 50m of the boundary of the site and / or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance or 'ecological receptors' within 50m of the boundary of the site and/or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance.
2 Assess the Risk of Dust Impacts	The risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological effects should be determined using four risk categories: negligible, low, medium and high based on the following factors: • the scale and nature of the works, which determines the risk of dust arising (i.e. the magnitude of potential dust emissions) classed as small, medium or large; and

Step		Description
		• the sensitivity of the area to dust effects, considered separately for ecological and human receptors (i.e. the potential for effects) defined as low, medium or high. Provide a map of nearest receptors.
2a	Define the potential Dust Emission Magnitude	Classify the magnitude of the likely risk as small, medium or large for the four activities.
2b	Define the Sensitivity of the Areas	Define the sensitivity of receptors as High, Medium or Low. Define sensitivity of people to Dust Soiling Effects and define the sensitivities of people to the health effects of PM_{10}.
2c	Define the Risk of Impacts	Combine the magnitude (as detailed in 2a) and the sensitivity (in 2b) to determine the risk of impacts with no mitigation applied. Summaries the risk of dusts impacts for the four activities in a table

4.6. Following the above air quality dust risk assessment appropriate dust and pollution measures are provided to ensure the air quality impacts of construction are minimised and any mitigation measures employed are effective.

4.7. The potential impacts and effects of construction activities on local air quality were based on professional judgement and with reference to the criteria set out in the Majors SPG guidance. This includes an assessment of the risk of dust effects arising from the likely construction activities, based on the magnitude of potential dust emissions and the sensitivity of the area.

Construction Vehicle Exhaust Emissions

4.8. The IAQM guidance on assessing demolition and construction effects states that:

4.9. "*Experience of assessing the exhaust emissions from on-site plant and site traffic suggests that they are unlikely to make a significant effect on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.*"

4.10. Given the area of the Site 380m^2 and the short duration of the construction phase (commencing September 2018 and completing October 2019), in accordance with the IAQM guidance, a quantitative assessment of the exhaust emissions from construction traffic is not required, and a qualitative assessment is appropriate.

Construction Plant Emissions

4.11. All construction plant now need to comply with the London Low Emission Standards set out for Non-Road Mobile Machinery (NRMM), as such it is considered that no significant effects are predicted for construction plant and no quantitative assessment is required.

Determining Significance of Effects

Dust Emissions

4.12. The potential effects of construction activities on local air quality were based on professional judgement and with reference to the criteria set out in the SPG.

Construction Vehicle Exhaust Emissions

4.13. The significance of the effects of construction vehicle exhaust emissions on air quality is based on professional judgement.

Construction Plant Emissions

4.14. The significance of the effects from construction plant emissions on air quality is also based on professional judgement, because all construction plant is required to meet the NRMM emissions standards for NO_2 and PM_{10} in the London Plan.

Construction Phase Effects

Nuisance Dust

Site Evaluation/ Screen the Need

4.15. The nearest residential properties are located within 20m of the Site, located on the opposite side of Cleveland Street to the west of the Site. Additionally, the Portland Hospital and Regents Park (a Site of Metropolitan Importance for Nature Conservation) are located approximately 100m south-west and 200m northwest of the Site respectively.

4.16. The Construction Phase Assessment Bands, which show the potential impact from nuisance dust before mitigation is applied, are presented in **Figure 1**.

Potential Dust Emission Magnitude

4.17. The risk of dust impacts from the demolition and construction phase has been considered based upon the magnitude of works as detailed in the Mayor's SPG. This includes:

- Demolition - The estimate for the total volume of buildings to be demolished is approximately 1,000m^2. Based on this, and considering the criteria in paragraph 4.27 of Mayor's SPG, the potential dust emissions during demolition activities would be of **small** magnitude.
- Earthworks - The area of the Site is approximately 380m^2 it is estimated that there would be less than five heavy earth moving vehicles active at any one time. Based on this, and considering the criteria in paragraph 4.29 of Mayor's SPG, the potential dust emissions during earthworks activities would be of **small** magnitude.
- Construction - In the absence of the total volume of buildings to be constructed, it was estimated that this would be less than 20,000m^3. Based on this, and considering the criteria in paragraph 4.31 of Mayor's SPG, the potential dust emissions during construction activities would be of small magnitude.
- Trackout – Given the surrounding site location and the size of the Site it is estimated that the number of HDVs would be less than 10 HDV trips in any one day. Based on this, and considering and considering the criteria in paragraph 4.33 of Mayor's SPG, the potential for dust emissions due to trackout activities would be of small magnitude.

4.18. A summary of the potential Dust Emission Magnitude is presented in **Table 7.**

Table 7: Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Small
Trackout	Small

Sensitivity of the Area

4.19. As detailed in the Mayor's SPG the sensitivity of the area has taken account of the following factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- The local background PM_{10} concentration; and
- Site-specific factors, such as whether there are trees or other vegetation to reduce the risk of wind-blown dust.

Sensitivity of the Area to Dust and Soiling Effects on People and Property

4.20. As discussed above, the nearest residential properties are located within 20m of the Site, located on the opposite side of Cleveland Street to the west of the Site. Additionally, the Portland Hospital is located approximately 100m south-west of the Site.

4.21. Based on Table 4.2 of the Mayor's SPG, given that there are 10-100 High Sensitivity receptors within 20m, it is considered the area is highly sensitive to dust and soiling effects on people and property.

4.22. The summary of the sensitivity of people to Dust and Soiling Effects is detailed in **Table 8**.

Table 8: Sensitivity of the Area to Dust and Soiling Effects on People and Property

Activity	Sensitivity of Area to Dust and Soiling Effects
Demolition	High
Earthworks	High
Construction	High
Trackout	High

Sensitivity of the Area to Human Health Impacts

4.23. As shown in **Table 5**, the annual mean background PM_{10} concentration at the Site was predicted to be 21.5ug/m^3 in 2016. This is below the annual mean Air Quality Strategy Objective for PM_{10} of 40ug/m^3.

4.24. Based on Table 4.3 of the Mayor's SPG, given that there are estimated to be 10-100 receptors within 20m and that PM_{10} concentrations are below 24ug/m^3, it is considered the area is of low sensitivity to human health impacts.

4.25. The summary of the sensitivity of people to the health effects of particulate matter is detailed in **Table 9** below.

Table 9: Sensitivity of the Area to Human Health Impacts

Activity	Sensitivity of Area to Human Health Impacts
Demolition	Low
Earthworks	Low
Construction	Low
Trackout	Low

Sensitivity of the Area to Ecological Impacts

4.26. Based on Table 4.4 of the Mayor's SPG Guidance, as Regents Park is located approximately 200m north-west of the Site, it is considered that the area is of low sensitivity to ecological impacts.

4.27. The summary of the sensitivity of the area to ecological impacts is detailed in **Table 10**.

Table 10: Sensitivity of the area to Ecological Impacts

Activity	Sensitivity of Area to Ecological Impacts
Demolition	Low
Earthworks	Low
Construction	Low
Trackout	Low

Risk of Impacts

4.28. Based on the dust emissions magnitude as set out in **Table 7** and taking account of the sensitivity of the area as detailed in **Tables 8, 9** and **10**, the overall risk impacts have been identified and presented in **Table 11**. This is based on the matrices set out in Tables 4.6 to 4.9 of the Mayor's SPG. The predicted impacts are prior to, and do not take account of, mitigation applied.

Table 11: Summary of Dust Risk

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Low Risk	Low Risk	Low Risk
Human Health	Negligible	Negligible	Negligible	Negligible
Ecological	Negligible	Negligible	Negligible	Negligible

4.29. The Site is considered **medium risk** to dust soiling impacts consequently, mitigation would be required to ensure that adverse impacts be minimised, reduced and, where possible, eliminated.

Construction Vehicle Exhaust Emissions

4.30. It is estimated that the number of construction HDVs trips would be less than 10 HDV trips in any one day. Emissions from construction traffic would be relatively small compared to existing road traffic emissions, which include 54,390 daily vehicles (including 3.1% HDVs) on Euston Road in 2016[41].

[41] http://www.dft.gov.uk/traffic-counts/index.php

4.31. Considering the current traffic movements around the Site, the likely effect of construction vehicles entering and egressing the Site on air quality would be **insignificant** during the construction period.

Construction Plant Emissions

4.32. In accordance with the London Plan all construction plant would need to adhere to the emissions standards for NO_2 and PM_{10} set out for NRMM. It is therefore considered the likely effect of construction plant on local air quality would be **insignificant**.

Demolition and Construction Mitigation Measures

Nuisance Dust

4.33. Although the assessment has shown that mitigation measures are not required, a range of environmental management controls should be implemented, in line with best practice. The controls, regarding the IAQM guidance relating to Mediume Risk sites, should include:

- removal of materials that have potential to produce dust, where possible;
- enclosure of material stockpiles at all times and damping down of dusty materials during dry weather;
- provision of appropriate hoarding and / or fencing to reduce dust dispersion and restrict public access;
- maintenance of Site fencing, barriers and scaffolding clean using wet methods;
- control of cutting or grinding of materials on the Site and avoidance of scabbling;
- dust generating machinery e.g. disk cutters to be fitted with vacuums;
- appropriate handling and storage of materials, especially stockpiled materials;
- restricting drop heights onto lorries and other equipment;
- fitting equipment with dust control measures such as water sprays, wherever possible;
- using a wheel wash, avoiding of unnecessary idling of engines and routing of Site vehicles as far from sensitive properties as possible;
- ensuring bulk cement and other fine powder materials are delivered in enclosed tankers and stored silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- using gas powered generators rather than diesel if possible and ensuring that all plant and vehicles are well maintained so that exhaust emissions do not breach statutory emission limits;
- switching off all plant when not in use;
- not allowing fires on the Site; and
- ensuring that a road sweeper is available to clean mud and other debris from hard-standing, roads and footpaths.

4.34. Such measures are routinely and successfully applied to major construction projects throughout the UK, and are proven to reduce significantly the potential for adverse nuisance dust effects associated with the various stages of construction work. It is considered that with these measures the residual effects would remain **insignificant**.

Construction Vehicle Exhaust Emissions

4.35. All construction traffic logistics would be agreed with LBC. Consideration would also be given to the avoidance, or limited use of, traffic routes in proximity to sensitive routes (i.e. residential roads etc.) and the avoidance (or limited) use of roads during peak hours, where practicable. The likely residual effect of construction vehicles entering and egressing the Site to air quality would remain as per the likely effect, **insignificant**.

Construction Plant Emissions

4.36. In accordance with the London Plan all construction plant would need to adhere to the emissions standards for NO_2 and PM_{10} set out for NRMM. It is therefore considered the likely residual effects of construction plant on local air quality would be **insignificant**.

5. Operational Phase

Assessment Methodology and Significance

5.1. The assessment of the operational phase has been based on professional guidance using the EPUK and IAQM Guidance criteria for when an air quality assessment is required, as well as LLAQM.PG (16) for the combustion plant.

5.2. The first criteria (Stage 1) of the EPUK and IAQM Guidance considers the size of the Development along with the introduction of any carparking and/or combustion use (i.e. onsite energy centre). The second criteria (Stage 2) provides indicative criteria based on the likely amount of change (i.e. number of vehicle movements and emission thresholds).

5.3. Given the Development would be 'car free' and no car parking is proposed the Development is not expected to give rise to air quality impacts associated with traffic emissions. As such, in accordance with the EPUK and IAQM Guidance no further consideration is required.

5.4. The indicative criteria for an air quality assessment in LLAQM.PG (16) states '*any combustion plant where the single or combined NO_x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion.'*

5.5. The proposed boilers would have an approximate peak combined output of 320Kw with a dry NO_x emission of 35mg/kWh, equating to 3.5 mg/sec. The emissions would also be released from a stack located at roof level, providing adequate dispersion. The proposed boiler would therefore be unlikely to give rise to impacts.

5.6. A diesel generator is proposed for safety purposes and would only be used during an emergency (such as to provide power for the firefighting shaft vent and to the lighting and evacuation lift). As such the diesel generator would be unlikely to give rise to impacts.

5.7. As detailed above, given the Development will not generate traffic emissions; emissions generated from the proposed boiler meet relevant emission levels and the diesel generator is for emergency use only, the Development is not expected to give rise to air quality impacts. As such the likely effect on local air quality would be **insignificant** and the operational phase of the Development has not been considered further in this report.

5.8. A review of the baseline conditions, as presented in Section 3 has been undertaken to qualitatively consider the potential air quality concentrations future users of the Development would be exposed to. The significance is based on professional judgement.

Predicted Future Exposure (Cambridge House Users)

5.9. LLAQM.TG(16)[42] states the annual mean AQS Objectives should not apply at '*Building façades of offices or other places of work where members of the public do not have regular access*' and in these locations only the short-term AQS objectives are applicable.

5.10. As the Development includes an academic assessment centre with associated facilities only the short term AQS objectives apply.

42 Defra, 2016, London Local Air Quality Management Technical Guidance, April 2016

5.11. Research[43] undertaken in support of LLAQM.TG(16) has indicated that the 1-hour mean AQS objective for NO_2 is unlikely to be exceeded at a roadside location where the annual-mean NO_2 concentration is less than 60µg/m^3.

5.12. As shown in **Table 2** and **Table 3**, monitored NO_2 concentrations at the closest automatic air quality monitors to the Site, located on Euston Road and Marylebone Road automatic monitor are above the 1-hour NO_2 AQS objective. Additionally, the Tottenham Court Road diffusion tube is located approximately 750m from the Site and the monitored NO_2 is above the annual mean NO_2 equivalent 1-hour NO_2 (as an annual mean NO_2 concentration of 60µg/m^3).

5.13. As shown in **Table 2** and **Table 3**, monitored PM_{10} concentrations at the closest automatic air quality monitors to the Site are below the 24-hour PM_{10} AQS objective in all years, apart from 2012 at the Marylebone monitor. Additionally, as shown in **Table 3** the $PM_{2.5}$ AQS Objective was met in all years.

5.14. Based on the results from the nearest monitoring to the Site it is considered that the short term AQS objective for PM_{10} is likely to be met for future users of the academic facility, however, the NO_2 1-hour mean AQS objective is unlikely to be met.

5.15. To minimise the exposure of future users to exceedances of the 1-hour mean NO_2 AQS objective, mitigation measure in the form of mechanical ventilation, heat recovery, by drawing air from the roof to ventilate the building is proposed. Following the provision of mechanical ventilation, the introduction of academic users is therefore considered **insignificant**.

43 AEA, 'Analysis of the relationship between annual-mean nitrogen dioxide concentration and exceedences of the 1-hour mean AQS Objective', 2008.

6. Summary and Conclusions

6.1. The main likely effects on local air quality during construction relates to nuisance dust. A range of mitigation measures to minimise or prevent dust emissions would be implemented through the construction works, this would ensure that the effects would be **insignificant** at all receptor locations.

6.2. It is anticipated that the effect of construction vehicles entering and egressing the Site during the construction period would also be **insignificant**, in the context of local background pollutant concentrations.

6.3. Any emissions from plant operating on the Site would be very small in comparison to the emissions from traffic movements on the roads adjacent to the Site. It is therefore considered that the likely effect on local air quality would be **insignificant**.

6.4. Given the Development would be 'car free'; emissions generated from the proposed boiler meet relevant emission levels; and the diesel generator is for emergency use only, the Development is not expected to give rise to air quality impacts. As such the likely effect on local air quality would be **insignificant** and the operational phase of the Development has not been considered further.

6.5. Based on a review of local monitoring data it is considered that the short term AQS objectives are likely to be met at the Site for PM_{10} but not NO_2.

6.6. To minimise the exposure of future users to exceedances of the 1-hour mean NO_2 AQS objective, mitigation measure in the form of mechanical ventilation, heat recovery, by drawing air from the roof to ventilate the building is proposed. Following the provision of mechanical ventilation, the introduction of academic users is therefore considered **insignificant**.

FIGURES

Figure 1: Site Plan and Construction Phase Assessment Bands

APPENDICES

Appendix A Assessor Experience

Name: Andy Fowler

Years of Experience: 5

Qualifications:

- BSc (Hons)
- Associate Member of the IAQM
- AIEMA (Associate Member of the Institute of Environmental Management and Assessment)
- Full Member of the Institution of Environmental Sciences (IES)

Andy has four years of experience in the environmental sector and a year specialising in the assessment of air quality and odour for a variety of projects. Andy has knowledge and experience of designing and undertaking ambient air quality monitoring programmes using passive diffusion tubes.

Andy has been involved in the technical delivery of a wide range of air quality projects for a variety of clients in both the public and private sector. These projects include consideration of emissions from both transportation and industrial sources, through both monitoring and modelling, and therefore he has an in depth understanding of the regulatory requirements for these sources and the published technical guidance for their assessment.

Name: Christopher Brownlie

Years of Experience: 10

Qualifications:

- BSc (Hons)
- MSc
- AIEMA (Associate Member of the Institute of Environmental Management and Assessment)
- MIAQM (Member of the Institute of Air Quality Management)

Chris has over ten years of experience in the assessment of air quality and odour for a variety of environmental impact assessment projects. Chris has knowledge and extensive experience of designing and undertaking ambient air quality monitoring programmes using real time equipment and passive diffusion tubes. This includes devising monitoring programs for dust deposition, typically to monitor levels of dust generated during construction activities in populated areas where there is the potential for nuisance to be caused.

Chris has been responsible for the technical delivery of a wide range of air quality projects for a variety of clients in both the public and private sector. These projects include consideration of emissions from both transportation and industrial sources, through both monitoring and modelling, and therefore he has an in depth understanding of the regulatory requirements for these sources and the published technical guidance for their assessment.

Waterman

UK and Ireland Office Locations