The Diorama Regents Park

Air Quality Assessment

The Diorama Estates Ltd

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Executive Summary

Cundall has been commissioned by Diorama Estates Limited to carry out an air quality assessment to support a planning application for the refurbishment of a four to five storey building for office use. The site is located at 18 Park Square East NW1 4LH in the London Borough of Camden (LBC), and lies within Camden's Air Quality Management Area, and also within the Marylebone Road from Marble Arch/Euston/Kings Cross Junction Air Quality Focus Area.

Existing conditions within the study area indicate that there is potential for nitrogen dioxide concentrations near the site to exceed the European Limit Value and National Air Quality Objective threshold levels.

The assessment has been undertaken in accordance with planning guidance provided by the Institute of Air Quality Management (IAQM) and advice provided by the council's sustainability team. In setting the scope of assessment, consideration has been made of the potential for impacts to occur during both the construction and operation phases of the development, and the exposure of nearby residents and future occupants of the site to air pollution.

A construction dust impact assessment was undertaken in accordance with IAQM construction assessment guidance. It was concluded that without appropriate mitigation measures, Medium risks were posed by demolition and trackout activities and Low risks were posed by construction and earthworks activities. Overall, the proposed site posed a Medium risk of causing significant effects. During construction, receptors within 350 m of the construction boundary could be susceptible to dust effects. However, with appropriate mitigation measures implemented, it was concluded that the construction effects of the Proposed Development would be not significant.

As the Proposed Development is nominally 'car-free', assessment of traffic-related impacts was scoped out of the operation phase assessment.

It is anticipated that heating and cooling for the development will be provided by a variable refrigerant flow heat pump system powered by electricity. Additionally, domestic hot water will be provided by a carbon dioxide air source heat pump system. There will be no combustion plant within the Proposed Development, and as such, combustion plant emissions were scoped out of the assessment.

The exposure of future users of the Proposed Development has also been assessed. Exceedances of the annual mean nitrogen dioxide objective are predicted to occur across the Proposed Development, although it should be noted that with the proposed use (B1 Office), there is no relevant exposure of residential receptors where the annual mean air quality objectives would normally apply. Ventilation to the whole building will be based on a minimum fresh air system to ensure that air quality will meet Building Regulations Approved Document F design guidelines. Several mechanical ventilation heat recovery units will be located at roof level. Fresh air intakes and exhaust outlet ductwork, at roof level, will be separated to prevent short circuiting and contamination of the fresh air. The use of additional high specification particulate filters is recommended to ensure compliance with Building Regulations Approved Document F guidelines. Using this system to provide an adequate supply of clean air, it is anticipated that the exposure of future occupants to poor air quality will be unlikely, and therefore no additional mitigation measures will be required.

An Air Quality Neutral Assessment was undertaken to determine compliance with the London Plan's policy relating to "Air Quality Neutral Development". The adopted approach has involved the calculation of emissions from the Proposed Development, and to compare this figure with the calculated building emissions benchmark.

It has been demonstrated that the development's NO_x building emissions meet the Air Quality Neutral benchmark as there will be no combustion plant emissions.

The Proposed Development is nominally 'car-free', lying in close proximity to a comprehensive public transport network. The number of trips generated by the development would need to exceed 33 trips per day before the Transport Benchmark was exceeded.

As such, the development is considered to comply with the Air Quality Neutral building emissions and transport benchmarks.

The Client will commit to the implementation of the best practice mitigation measures identified in this report during the construction phase of the development. It is anticipated that the generation of dust and harmful pollutants emissions from construction site activities will be reduced with the correct implementation of these measures.

Additionally, a Construction Management Plan (CMP) which conforms to the requirements of LBC's planning requirements will be submitted in support of the planning application and a suitable monitoring programme will be discussed and agreed with LBCC prior to commencement of works.

Overall, it was concluded that with the provision of appropriate mitigation measures, construction activities and operation impacts will have no significant effects on local air quality. The proposals are therefore compliant with the requirements of the relevant Supplementary Planning Guidance and new draft London Plan.

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1.0 Introduction

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Cundall has been commissioned by Diorama Estates Limited to carry out an Air Quality Assessment to support a planning application for the refurbishment of a part 4 , part 5- storey property, arranged over basement, lower ground and upper ground to third floor level along Park Square East and lower ground to second floor level to the rear along Peto Place. The site is located at 18 Park Square East NW1 4LH in the London Borough of Camden and lies within Camden's Air Quality Management Area.

Preliminary outline layout plans for the basement, ground and third floors are provided in Figure 1 to Figure 3.

Figure 1 Proposed Basement Plan

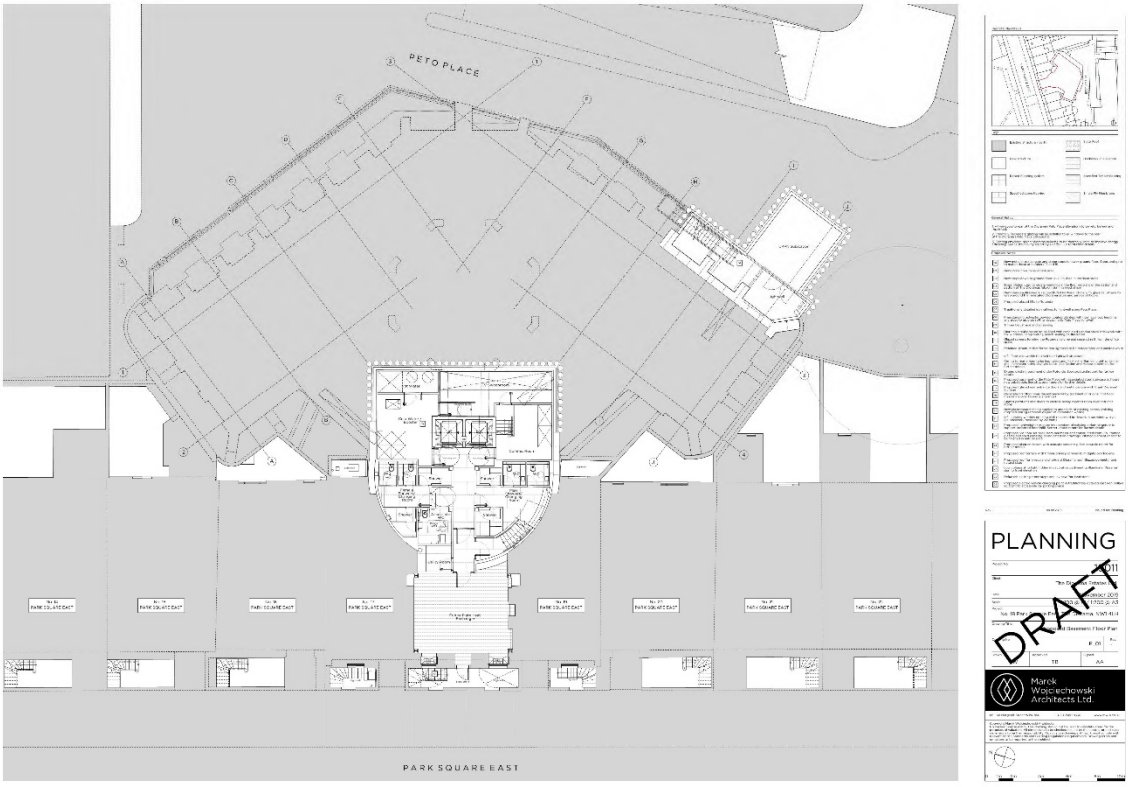


Figure 2 Proposed Ground Floor Plan

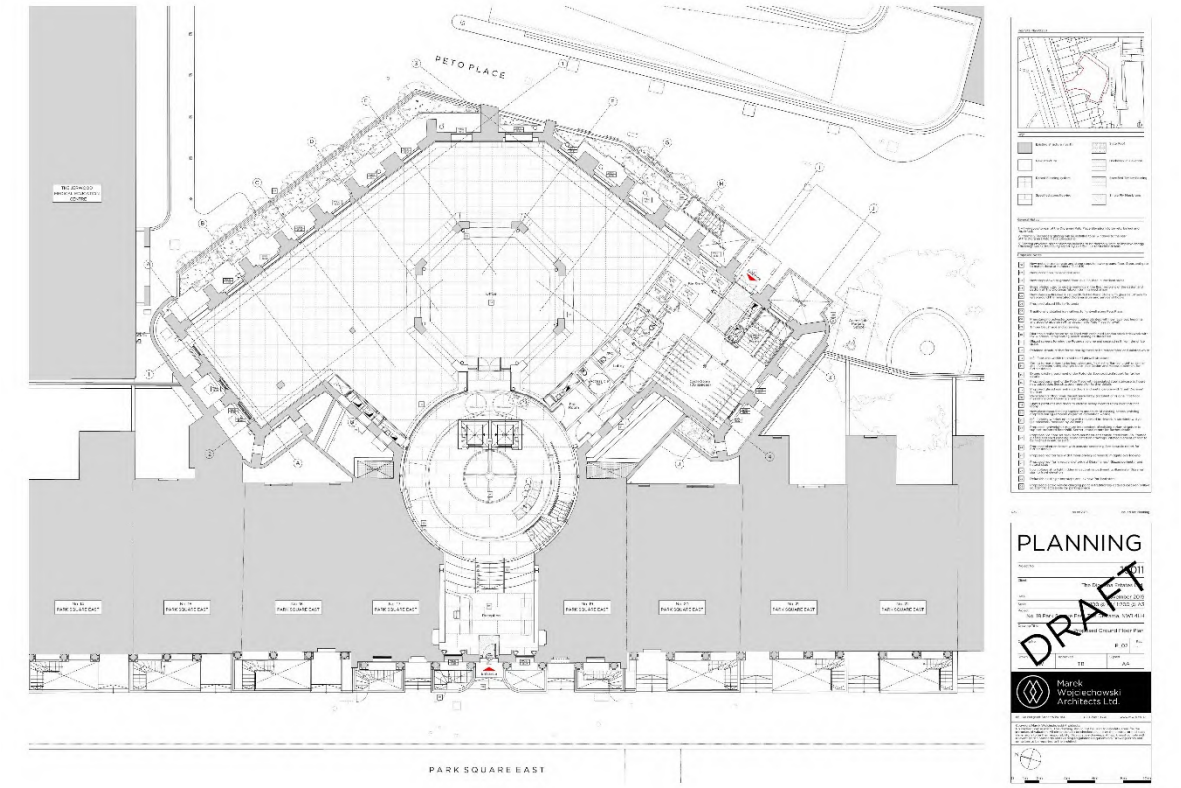
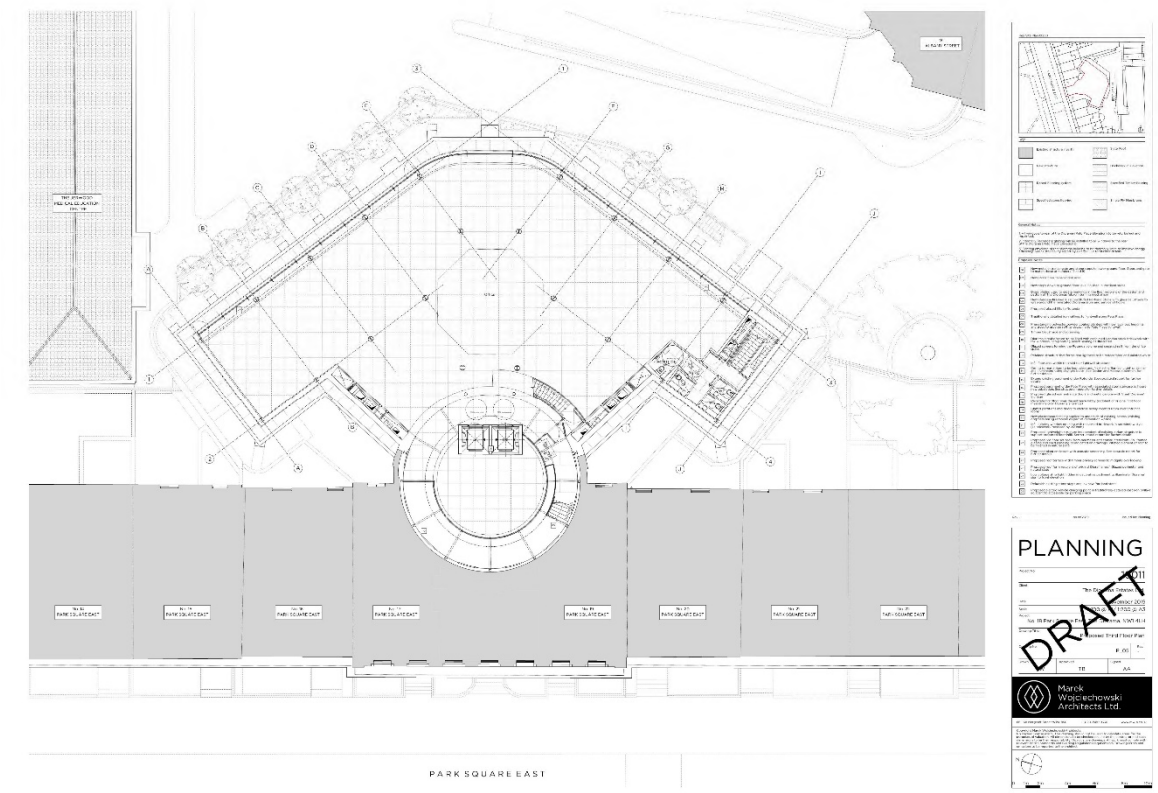


Figure 3 Proposed Third Floor Plan



The Proposed Development comprises the following activities:

- Insertion of new floor to no.18 at first floor level.
- Change of use of the Diorama building from B1(a) use to B1 Office use, removing the planning condition restricting the use to charities and institutions only.
- Proposed roof extension to the Diorama building on Peto Place to provide additional office floor space at third floor level.
- Sensitive internal modifications to the Diorama building, including insertion of 2 no. passenger lifts to provide step-free access to the proposed office, along with increased provision for male and female WCs and modifications to fire escapes.
- Change of use of No. 17 & No. 19 Park Square East, from B1(a) use, back to their original C3 Residential use, to create 2 no. single- family dwellings and subdivision of proposed residential floorspace. Note that this element will be covered as part of a separate planning application. The proposed land use allocation for the development is summarised in Table 1.

Table 1 Proposed Land Uses (Schedule revision 22/11/2019)

Location	Gross Internal Area (GIA) (m^2)	
	Existing	**Proposed**
Basement	105.2	226.1
Ground	688.5	742.7
First	664.3	687.4
Second	581.2	639.4
Third	102.9	593.0
Sub Totals	**2,142.1**	**2,888.6**

1.1 Scope of Assessment

In setting the scope of assessment, consideration has been made of the potential for effects to occur during both the construction and operation phases of the development.

1.1.1 Construction

Limited demolition actives will take place on each of the floors identified above prior to construction of the new elements within the wider programme. It is anticipated that the construction process will take up to eighteen months, and this is assumed to include demolition, construction, earthworks and trackout activities. The potential for air quality effects during the construction phase has been assessed, and the extent of mitigation required for dust/ Particulate Matter (PM_{10}) generated by construction activities has been considered.

Machinery used during construction can generate new sources of emissions, as well as traffic movements to/from the site and the works themselves. When assessing the effect of dust emissions generated during construction works, receptors include those nearest to the construction boundary of the site in each direction. These receptors have the potential to experience effects of greater magnitude due to emissions of dust generated by the works, when compared with more distant receptors.

Without appropriate mitigation controls in place, there is the potential for adverse effects to occur during to the construction of the Proposed Development. The implementation of best practice mitigation controls can ensure any potential adverse effects would be not significant.

Best practice mitigation controls have been identified in accordance with IAQM guidance, Guidance on the Assessment of Dust from Demolition and Construction v1.1 (2016) and London Mayor's guidance, The Control of Dust and Emissions during Construction and Demolition supplementary planning guidance (2014).

1.1.2 Operation

During the development's operation, consideration has been made of the potential emissions from road traffic generation. Although the development is nominally 'car-free', there will be a small number of vehicle trips associated with taxi movements and service vehicles. Therefore, the Proposed Development has the potential to cause small increases in traffic on local roads, which has the potential to effect concentrations of NO_2, PM_{10} and $PM_{2.5}$.

It is anticipated that heating and cooling for the development will be provided by a variable refrigerant flow (VRF) heat pump system powered by electricity. Additionally, domestic hot water will be provided by a carbon dioxide air source heat pump (ASHP) system. External condensers will be mounted at roof level and these will be coupled with buffer vessels to store the hot water; this system will also be powered by electricity.

There will be no combustion plant within the Proposed Development, and as such, combustion plant emissions were not considered further within the assessment.

1.1.3 Human Exposure

Potential exposure of future occupants of the site was considered in accordance with the Mayor of London's Supplementary Planning Guidance (SPG), Defra Technical Guidance and IAQM Planning Guidance, with reference to Defra Background maps, maps published within the London Atmospheric Emissions Inventory and Local monitoring data.

It has been assumed that the operation phase of the development will commence in 2021.

1.1.4 Air Quality Neutral Assessment

An air quality neutral assessment was undertaken to determine compliance with the London Plan's policy relating to "Air Quality Neutral Development". The Air Quality Neutral Planning Support document was published in March 2013 and updated in April 2014 to accompany the 2014 publication of the Greater London Authority's (GLA's) Sustainable Design and Construction SPG. It provides specialist consultants with a methodology to undertake an 'Air Quality Neutral' assessment, as well as emission benchmarks for buildings and transport, against which the predicted values for the Proposed Development can be compared.

1.1.5 Consultation with LBC

Following an initial screening and scoping exercise, consultation with Tom Parks, Senior Air Quality Officer, was undertaken on 21st November 2019 to discuss and agree the scope of the assessment. General advice was provided which was read in conjunction with Camden's planning guidance (CPG Air Quality) and Local Plan (Section CC4- Air Quality). Further details are provided in Appendix A.

1.2 Study Area

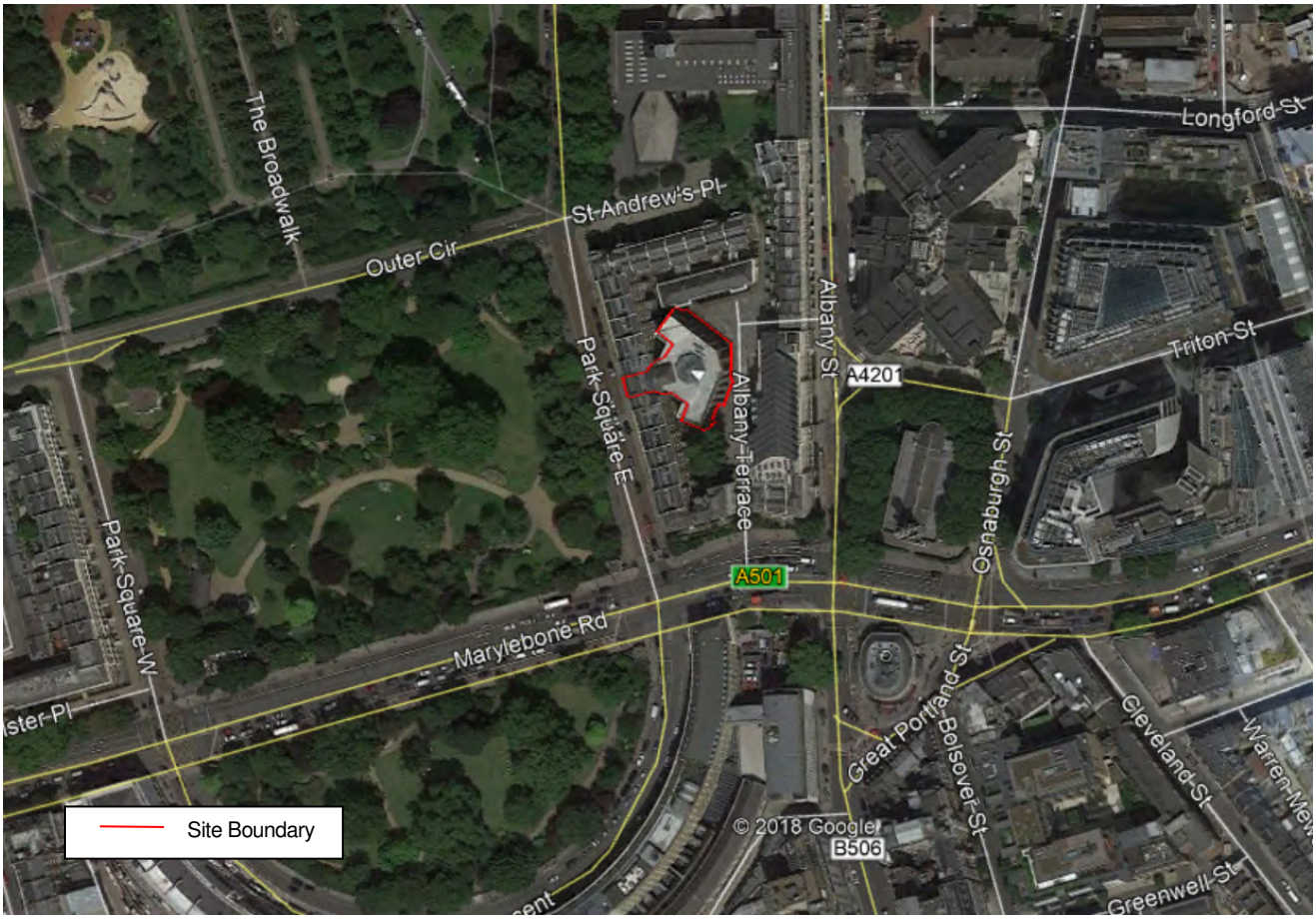
The site is located at 18 Park Square East NW1 4LH.

The building fronts Park Square to the east of Park Square Gardens and lies 70m to the south-east of Regents Park. The existing site comprises a part 4, part 5- storey property, arranged over basement, lower ground and upper ground to third floor level along Park Square East and lower ground to second floor level to the rear along Peto Place.

It is bounded to the north by St Andrew's Place, to the east by Peto Place, to the south by Marylebone Road (A501) and to the west by Park Square East. The land use in the area is mixed, comprising residential, retail, commercial and leisure uses within the immediate vicinity, as well as Portland Street underground station located 100m to the south of the Proposed Development on Marylebone Road.

The location of the development site is illustrated in Figure 4.

Figure 4 Location of the Proposed Development Site (Courtesy of Google Maps)



2.0

Legislation, Policy and Guidance

2.0 Legislation, Policy and Guidance

2.1 Key Legislation and Policy

This assessment considers key air quality legislation, which is summarised in Table 2.

Table 2 Key Legislation

Legislation	Description
EU Ambient Air Quality Directive 2008/50/EC	Establishes the requirements of Member States in terms of improvements required to air quality. Sets standards for a variety of pollutants for human-health and the environment.
The Air Quality Standards Regulations 2010	Transposes formalised EU Limit Values set out in directive 2008/50/EC to UK law.
The Clean Air Quality Strategy 2019	The Clean Air Strategy sets out the case for action and demonstrates the government's determination to improve air quality. In some cases, the goals are even more ambitious than EU requirements to reduce people's exposure to toxic pollutants like nitrogen oxides, ammonia, particulate matter, non-methane volatile organic compounds and sulphur dioxide.
Environment Act 1995, Part IV	Defines the requirements for Local Air Quality Management (LAQM).
Environment Protection Act 1990, Amended by the Pollution Prevention and Control Act 1999	Part III provides statutory nuisance provisions for nuisance dust.

Relevant planning policy and guidance is also considered at the National, Regional, and Local levels as summarised in Table 3.

Table 3 Key Policy and Guidance

Policy / Guidance	Description
Ministry of Housing, Communities & Local Government - National Planning Policy Framework (NPPF) 2019	Paragraph 181 of the NPPF 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 AQMAs 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 AQMAs and Clean Air Zones is consistent with the local air quality action plan".
London Plan (2016)	Policy 7.14 Improving air quality on planning decision: Development proposals should: a) minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within 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

Policy / Guidance	Description
	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 AQMAs). d) ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches 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.
Draft London Plan- Consolidated Suggested Changes Version 2019	The current 2016 London Plan is still the adopted Development Plan, but the Draft London Plan is a material consideration in planning decisions. Policy SI1 Improving air quality A Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality. B To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed: 1 Development proposals should not: a) lead to further deterioration of existing poor air quality b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits c) create unacceptable risk of high levels of exposure to poor air quality. 2 In order to meet the requirements in Part 1, as a minimum: a) Development proposals must be at least air quality neutral b) Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures c) Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1 d) Development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people, which do not demonstrate that design measures have been used to minimise exposure should be refused. C Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating: a) How proposals have considered ways to maximise benefits to local air quality, and

Policy / Guidance	Description
	b) What measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this. D In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance115. E Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development.
Mayor of London's Supplementary Planning Guidance (SPG) The Control of Dust and Emissions during Construction and Demolition (2014)	The SPG 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 NOx 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 all relevant polices in the London Plan and the Mayor's Air Quality Strategy to neighbourhoods, borough, developers, architects, consultants and any other parties involved in the construction phase; sets out methodology for air quality impact of construction in London; identifies good practice for mitigating and managing air quality impacts for construction phase.
Camden Local Plan (July 2017)	Camden's Local Plan was adopted in July 2017 and includes an air quality chapter. Within this, Policy CC4 states that: ▪ 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 consider 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. ▪ In order to help reduce air pollution and adhere to London planning policy, developments must demonstrate that they comply with Policy 7.14 of the London Plan (to be at least air quality neutral).
Camden Planning Guidance (CPG) - Air Quality (March 2019)	The CPG document support the policies in the Local Plan 2017. This guidance is therefore consistent with the Local Plan and forms a Supplementary Planning Document (SPD) which is an additional "material consideration" in planning decisions.

Policy / Guidance	Description
	▪ All developments in areas of poor air quality are to protect future occupants from exposure to poor air quality. ▪ All developments are to limit their impact on local air quality and be at least air quality neutral. ▪ Air quality neutral assessments are required for all major developments. Major developments are schemes of 10 or more dwellings or buildings where the floorspace created is 1,000 square metres or more.
LBC Air Quality Action Plan 2019-2022	Camden Council has declared an AQMA for NO_2 and PM_{10} that covers the whole Borough and has developed an Air Quality Action Plan (AQAP). Camden's Clean AQAP outlines the Councils commitment to improving air quality between 2019 and 2022. The key objectives of the plan are to reduce particulate and NO_2 concentrations by: 1. Reducing building emissions 2. Reducing construction emissions 3. Tackling transport emissions 4. Reducing exposure in communities and schools 5. Reducing service vehicle and freight emissions 6. Public Health and awareness raising 7. Lobbying wider organisation The plan contains several air quality 'focus' locations, however, the Proposed Development does not lie within any of these areas.
Defra LAQM Technical Guidance (LAQM.TG16) (2018) and London LAQM (LLAQM) Technical Guidance 2016.	The guidance issued under Part IV of the Environment Act 1995 is designed to help local authorities with their LAQM duties. The guidance sets out the general approach to use and detailed technical guidance to guide local authorities through the Review and Assessment process.
Environmental Protection UK (EPUK) / IAQM Land Use Planning & Development Control (2017)	This guidance has been produced to ensure that air quality is adequately considered in the land use planning and development control processes by relevant officers within local authorities, developers, and consultants involved in the preparation of development proposals and planning applications. This document is best practice guidance and has no formal or legal status.
GLA 80371 Air Quality Neutral Planning Support (2014)	The document provides guidance on the application of the "air quality neutral" policy of Mayor of London's SPG, Sustainable Design and Construction (2014).

The air quality EU limit values and UK Air Quality Objectives (AQOs) which apply to the development are shown in Table 4 and these will be used as the basis of assessment.

Table 4 AQO and EU Limit Values

Pollutant	Averaging Period	Objective Threshold / EU Limit Value ($\mu g/m^3$)	WHO Guideline Values ($\mu g/m^3$)
Nitrogen Dioxide (NO_2)	Annual mean	40	40
	1-hour mean	200 Not to be exceeded more than 18 times per year (equivalent to the 99.79th percentile of 1-hour mean values)	N/A
Particulate Matter (PM_{10})	Annual mean	40	20
	24-hour mean	50 Not to be exceeded more than 35 times per year (equivalent to the 90.4th percentile of 24-hour means)	N/A
Particulate Matter ($PM_{2.5}$)	Annual mean	25	10

3.0

Approach and Methodology

3.0 Approach and Methodology

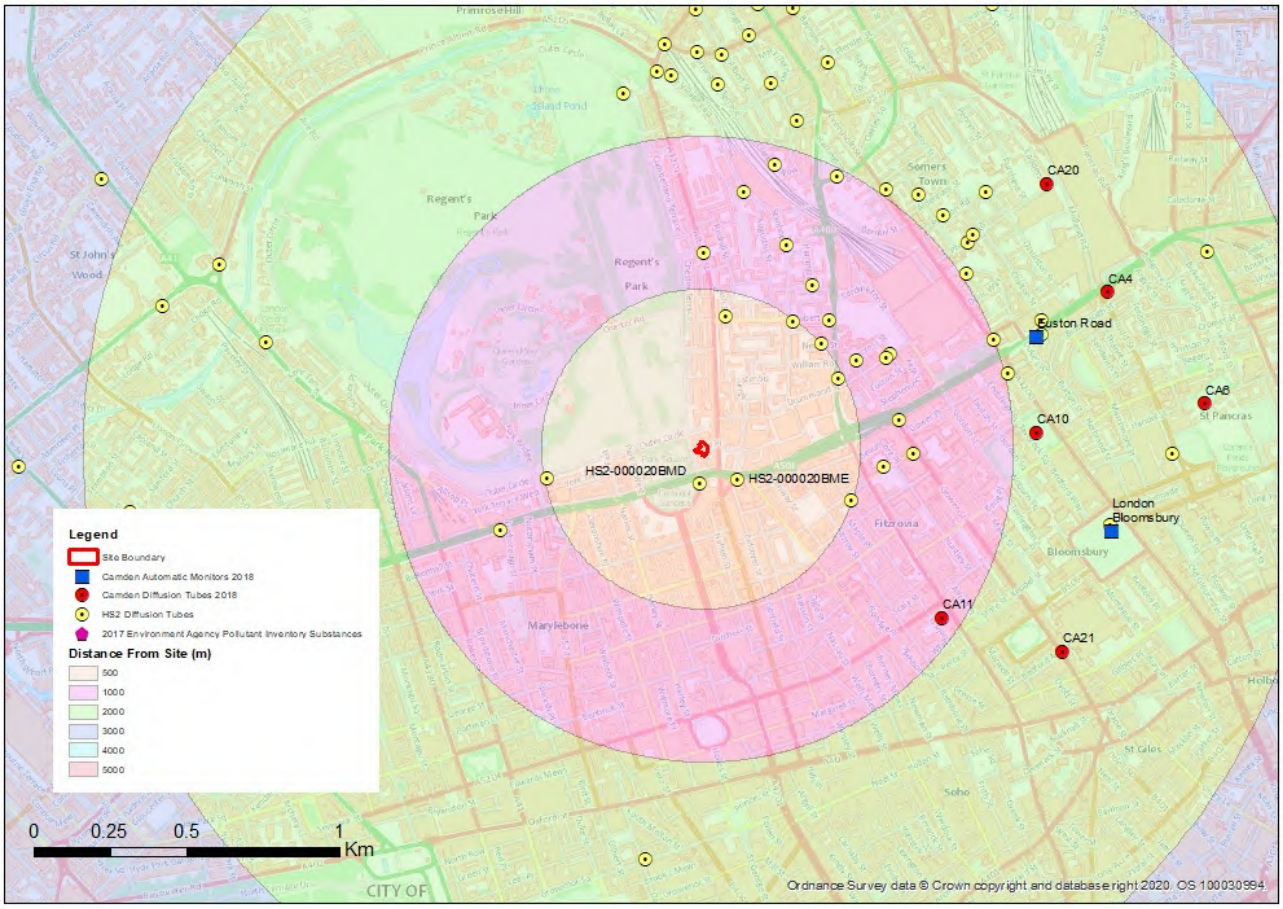
3.1 Existing Conditions

Existing sources of emissions within the study area have been defined using several approaches. Industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register[1] and the Environment Agency's Pollution Inventory Data[2].

Information on existing air quality has been obtained by collating the results of monitoring carried out by LBC and as part of the wider HS2 study[3]. This covers both the study area and nearby sites; the latter being used to provide context for the assessment. Background concentrations have been defined using the national pollution maps published by Defra. These cover the whole country on a 1x1 km grid. Comparison of the mapped background concentrations with those measured at background locations in Camden indicate that the use of monitored data is more conservative, presumably due to additional contributions from remote road sources.

The location of the site in relation to local monitoring sites is illustrated in Figure 5.

Figure 5 Local Monitoring Sites



[1] Defra UK Pollutant Release and Transfer Register data - http://prtr.defra.gov.uk/pollutant-releases Accessed - May 2020

[2] Environment Agency Pollution Inventory - https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory Data version - April 2019

[3] Monitoring the environmental effects of HS2- https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2#annual-monitoring-reports. Accessed May 2020.

3.2 Construction Phase

The impact of anticipated construction has been assessed in accordance with London Mayors and IAQM guidance. The construction phase assessment considers the anticipated physical activities occurring on-site that are likely to result in the generation of dust which gives rise to impacts on dust soiling and human-health, especially through the generation of PM_{10} and $PM_{2.5}$.

The assessment involves the identification of whether each phase of on-site activity (demolition, earthworks, construction, and trackout) represents a low, medium, or high risk of causing significant effects, and then identifies suitable mitigation measures for the relevant level of risk assigned. Details of the London Mayors/IAQM construction impact assessment procedure are presented in Appendix B.

3.3 Operation Phase

3.3.1 Combustion Plant Impact

The latest design details for the Proposed Development do not include any combustion plant.

3.3.2 Road Traffic Impacts

3.3.2.1 Comparison Against IAQM Criteria

IAQM's guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' (updated in January 2017) was issued to ensure that air quality is adequately considered in the land-use planning and developmental control process. Full details are provided in Appendix C.

The guidance includes a method for screening the requirement for an air quality assessment, the undertaking of an air quality assessment, the determination of the air quality impact associated with a development proposal and whether this impact is significant.

The information relevant to the Proposed Development has been compared against IAQM's indicative criteria and the results are summarised in Appendix D.

In summary, operation phase transport impacts were scoped out of further assessment as the predicted development trips fall below IAQM threshold criteria, however, taxi and service vehicle movements were considered within the Air Quality Neutral assessment.

3.3.3 Human Exposure

An air quality assessment of new exposure of the Proposed Development itself was undertaken in accordance with IAQM guidance. This assessment evaluated the exposure that residents or users might experience, considering the following:

- The background and future baseline air quality, and whether this will be likely to approach, or exceed, the threshold values set by the air quality objectives
- The presence and location of air quality focus areas as an indicator of local hotspots where the air quality objective thresholds may be exceeded
- The presence of any heavily trafficked roads, with emissions that could give rise to significantly higher concentrations of pollutants (e.g. NO_2), that would cause unacceptably high exposure for users of the new development; and
- The presence of a source of odour and/or dust that may affect amenity of future occupants of the development.

The current/baseline conditions were established qualitatively by reviewing relevant air quality information that is readily available from the Local Authority, including Review and Assessment Reports and historic monitoring data. These data were used to understand current/baseline pollutant concentrations at receptors within the study area, and the risk that any changes in air quality may cause exceedance of AQOs at these locations.

The exposure that future users might experience was considered in accordance with IAQM Planning Guidance, Defra technical guidance Local Air Quality Management Technical Guidance (LAQM.TG16)[4] and Building Regulations Approved Document F[5].

3.3.3.1 Background pollutant concentrations

Defra's mapped background pollutant concentrations were considered within the assessment of exposure at the site.

3.4 Air Quality Neutral

The guidance relating to Air Quality Neutral follows a tiered approach, such that all developments are expected to comply with minimum standards for emissions associated with land-use. Compliance with "Air Quality Neutral" is then founded on emissions benchmarks that have been derived for both building (energy) use and road transport in different areas of London. Developments that exceed the benchmarks are required to implement on-site or off-site mitigation to offset the excess emissions.

The adopted approach has involved the calculation of emissions from the Proposed Development, and to compare this figure with the calculated building emissions benchmark.

[4] Defra (2016), Local Air Quality Management Technical Guidance (TG16)

[5] The Building Regulations 2010. Ventilation: Approved Document F1 – Means of Ventilation. HMSO (2015)- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/468871/ADF_LOCKED.pdf. Accessed May 2020.

4.0

Site Description and Baseline Conditions

4.0 Site Description and Baseline Conditions

To assess the significance of any new development proposal (in terms of air quality), it is necessary to identify and understand the baseline air quality conditions in and around the study area. This provides a reference against which any potential changes in air quality can be assessed. Since air quality is predicted to change in the future (mainly because of changes to vehicle emissions), the baseline situation is extrapolated forward to the opening year. The future baseline scenario is the predicted baseline for the opening year.

To identify the existing air quality conditions, a review of publicly available information has been undertaken, including the latest local authority air quality reports, monitoring data, and background concentration maps. This section presents the results of the review.

4.1 Local Air Quality Management

The Proposed Development is in Camden, and the baseline assessment includes a brief review and summary of the Council's LAQM Annual Status Report (ASR) and AQAP.

The 2019-2022 AQAP concludes that road transport and commercial and domestic gas boilers are the major source of NO_2 air pollution in Camden, and the council has declared a city wide AQMA for exceedances of the annual mean NO_2 objective threshold and 24-hour PM_{10} objective. The AQAP sets out measures to improve air quality in the AQMA, including 5 specific focus areas. The Proposed Development lies within the Marylebone Road from Marble Arch/Euston/Kings Cross Junction Air Quality Focus Area.

4.2 Local Sources of Pollution

A review of data held by the Environment Agency did not indicate the presence of any industrial sources within 2 km of the Proposed Development.

4.3 Local Air Quality Monitoring

LBC operates a network of three automatic monitors and fourteen diffusion tube monitoring sites. The closest monitoring points are located within 2 km of the site and include two automatic monitors and 7 diffusion tube monitors at urban background, kerbside and roadside locations. Values ranged between 26.7 and 92.5 µg/m^3 between 2017 and 2018, and showed decreasing concentration trends over this period.

Two HS2 monitors were locates closest to the Proposed Development, 0.1km south and showed values ranging between 66.2 and 85.5 µg/m^3 NO_2 during 2018 and 2018.

The closest urban background site, Tavistock Garden, was located 1.1 km east of the site and the NO_2 concentration was 35.4 µg/m^3 in 2018.

Table 5 presents the NO_2 concentrations recorded at the sites for 2018.

Table 5 Local Air Quality Monitoring

Site ID	Location	Site Type	Distance from Site	2017 Annual Mean Concentration (µg/m^3)	2018 Annual Mean Concentration (µg/m^3)
CA4	Euston Road	Roadside	1.4 km NE	**92.5**	**69.2**
CA6	Wakefield Gardens	Urban Background	1.6 km NE	-	26.7
CA10	Tavistock Garden	Urban Background	1.1 km E	-	35.4
CA11	Tottenham Court Road	Kerbside	0.9 km SE	-	**65.7**
CA20	Brill Place	Roadside	1.4 km NE	**57.3**	**41.1**

Site ID	Location	Site Type	Distance from Site	2017 Annual Mean Concentration (µg/m^3)	2018 Annual Mean Concentration (µg/m^3)
CA21	Bloomsbury Street	Roadside	1.3 km SE	**80.7**	**59.4**
CA23	Camden Road	Roadside	1.9 km NE	**75.4**	**55.6**
London Bloomsbury	Bloomsbury	Urban Background	1.4km SE	38.0	36.0
Euston Roadside	Euston Road	Roadside	1.1km NE	**83.0**	**82.3**
HS2-000020BMD	Crescent Road	Roadside	0.1km S	**67.4**	**66.2**
HS2-000020BME	A501/A4201	Roadside	0.1km SE	**81.6**	**85.5**

4.4 Defra's Background Pollutant Concentration Mapping

Defra background maps indicate that background pollutant concentrations around the Proposed Development are below the respective annual mean objective thresholds for NO_2, PM_{10}, and $PM_{2.5}$. Details of background concentrations are shown in Table 6.

Table 6 Defra's Background Concentrations

Pollutant	Grid Reference	Defra Mapped 2018 Concentration (µg/m^3)
NO_2	528500,182500	35.0
PM_{10}		19.1
$PM_{2.5}$		12.7

Background concentrations of NO_2, PM_{10}, and $PM_{2.5}$ are currently within the objective thresholds and it is anticipated that they should improve over time due to the expected reduction in emissions from all emission sources.

4.5 London Atmospheric Emissions Inventory

The LAEI is a database of geographically referenced datasets of pollutant emissions and sources in Greater London[6]. The base year is 2016 and the LAEI includes the key pollutants emissions such as NO_x and PM_{10} from line sources (e.g. road transport), area sources (e.g. aviation, domestic and commercial fuel) and point sources (e.g. Part A and Part B processes). The concentration maps across the whole LAEI area, in a resolution of 20 m x 20 m, were produced by the LAEI dispersion modelling.

- The 2016 annual mean NO_2 concentration map shows that modelled concentrations at the proposed site are expected to range between 43 µg/m^3 and 55 µg/m^3, as shown in Figure 6.
- The 2016 annual mean PM_{10} concentration map shows that modelled concentrations at the proposed site are expected to range between 22 µg/m^3 and 28 µg/m^3, as shown in Figure 7.
- The 2016 annual mean $PM_{2.5}$ concentration map shows that modelled concentrations at the proposed site are expected to range between 13 µg/m^3 and 17 µg/m^3, as shown in Figure 8.

[6] See https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2016. Accessed 14th July 2019.

The concentration maps from LAEI show that there are likely exceedances of the annual mean NO_2 objective in 2016, but unlikely exceedances of the annual mean PM_{10} and $PM_{2.5}$ objective limit values in 2016 at the proposed site.

Figure 6 LAEI NO_2 concentration map for 2016 projection

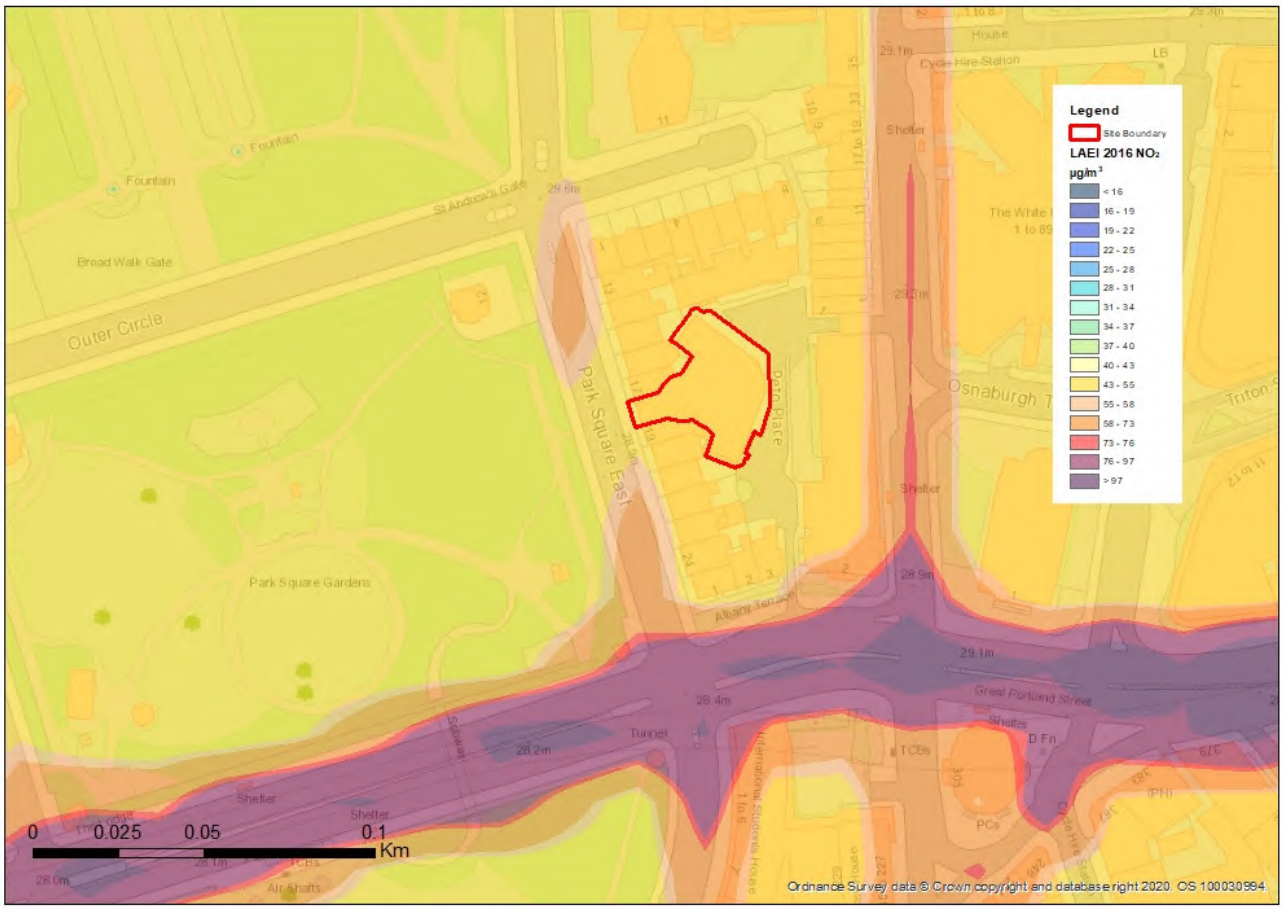


Figure 7 LAEI PM_{10} concentration map for 2016 projection

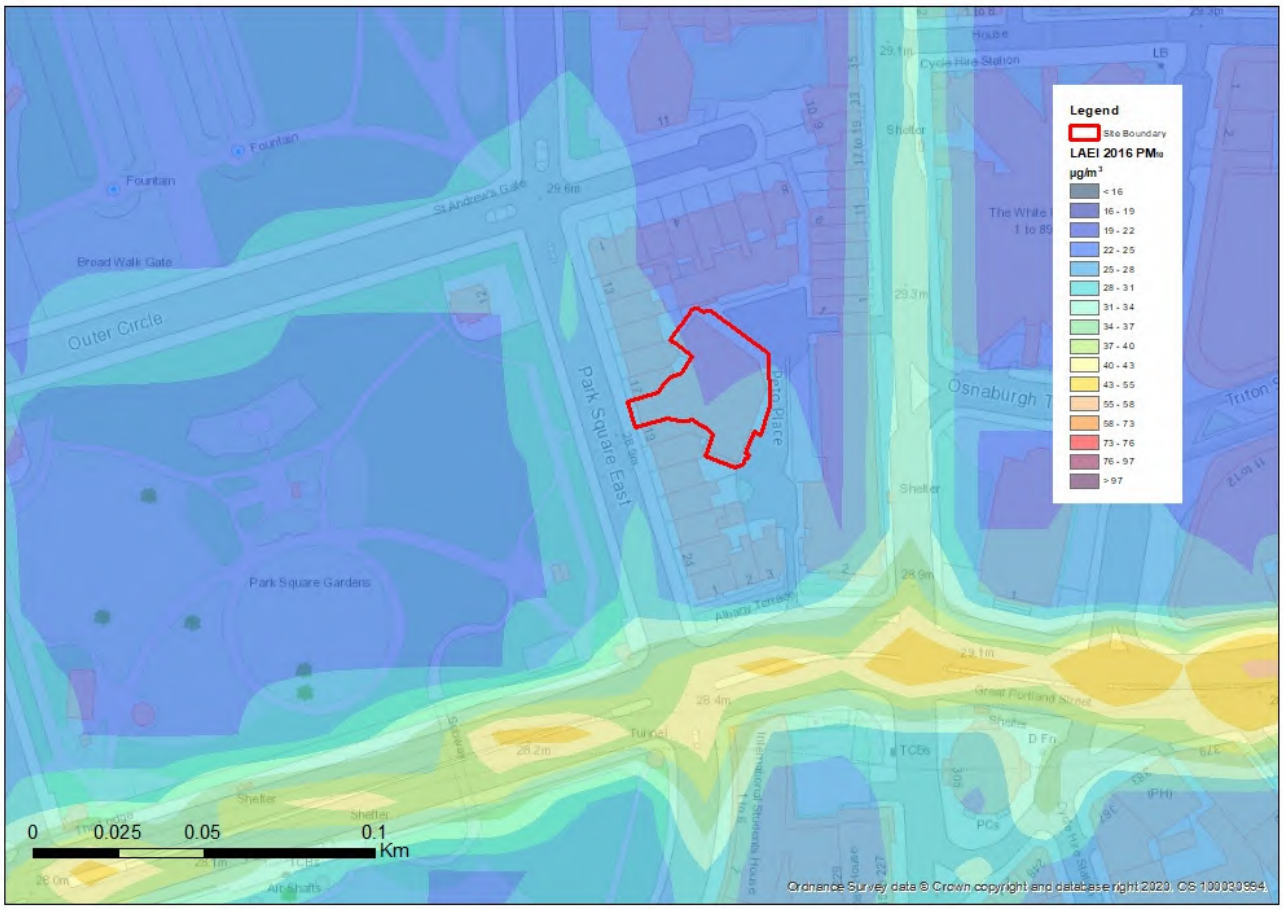
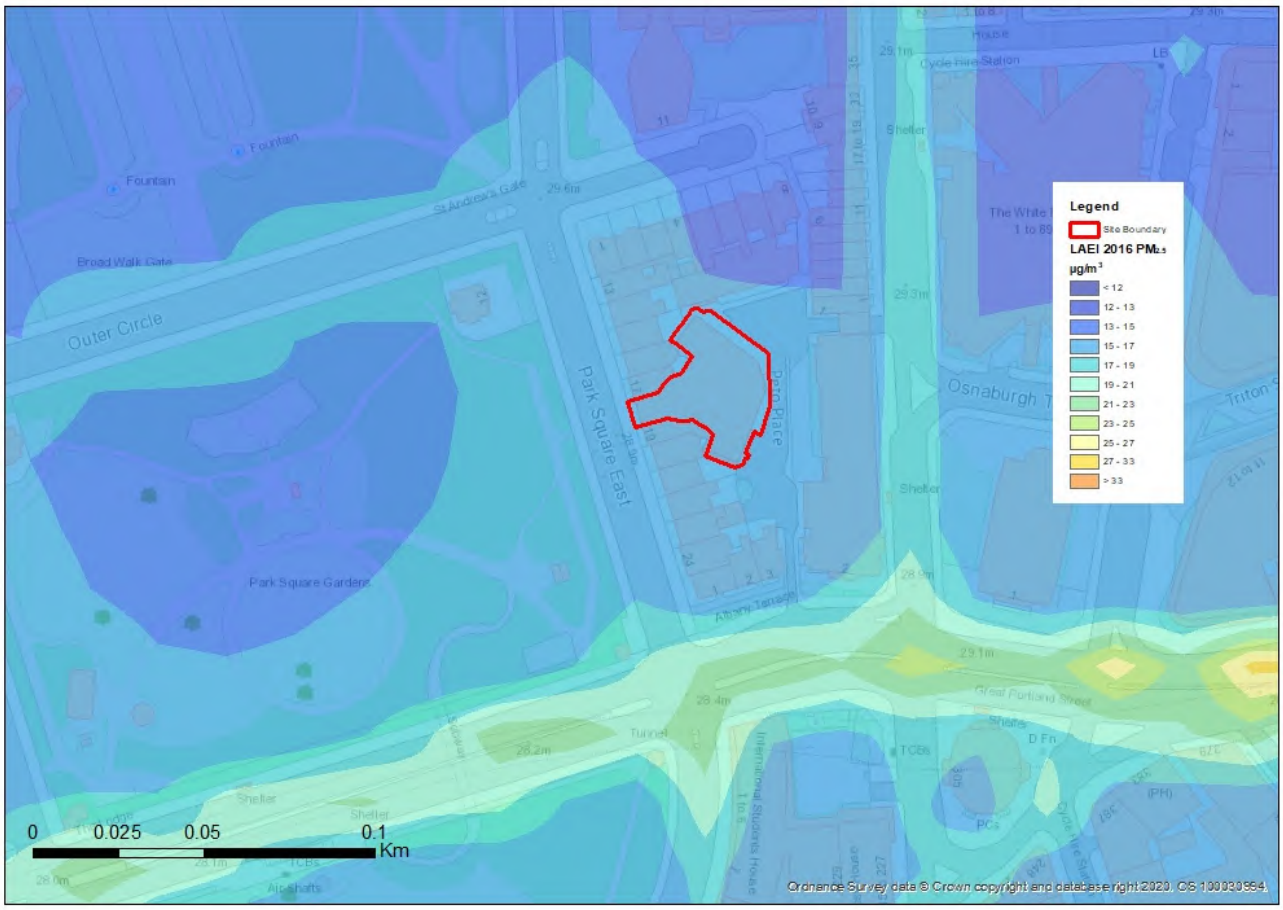


Figure 8 LAEI $PM_{2.5}$ concentration map for 2016 projection



5.0

Impact Evaluation

5.0 Impact Evaluation

5.1 Construction Phase Impacts

5.1.1 Need for a Detailed Assessment

An assessment was undertaken as there are 'human receptors' within 350 m of the boundary of the site; and 50 m of the route used by construction vehicles on the public highway, up to 500 m from the site entrance.

5.1.2 Risk of Dust Impacts Assessment

Dust Emission Magnitude Analysis

The dust emission magnitude is based on the scale of the anticipated work and classified as Table 7 below:

Table 7 Determination of the potential dust emission magnitude

Stage	Relevant Definition	Highest Potential Dust Emission Magnitude
Demolition	1. Existing building volume <20,000 m^3 2. Potentially dusty construction material includes bricks, mortar, concrete 3. Some demolition activities >10 above ground	Medium
Earthworks	4. Estimated site area is <2,500 m^2 5. Minimal earthworks activities 6. Formation of stockpile enclosures <4 m in height 7. <5 heavy earth moving vehicles active at any one-time	Small
Construction	8. Estimated total building volume is less than 25,000 m^3 9. Construction materials with low potential for dust release	Small
Track out	10. <10 HDV (>3.5 tonnes) outward movements in any one day 11. Surface material with low potential for dust release 12. Unpaved road length <50m	Small

The highest dust emission magnitude is likely to be Medium.

Sensitivity of Areas Analysis

The sensitivity of the receptors and area has been defined for both dust soiling and human-health impact as shown in Table 8.

Table 8 Determination of the sensitivity of the surrounding area

Receptor Sensitivity	Relevant Definition	Sensitivity of the Receptors	Relevant Definition	Sensitivity of the Area
Dust Soiling for Demolition, Earthworks, Construction	Dwellings	High	10 – 100 receptors within 20 m of site	High
Dust Soiling for Trackout	Dwellings	High	>100 receptors within 20 m of route used by construction traffic	High
Human-Health Effects of PM_{10}	Dwellings	High	<24 µg/m^3 annual mean PM_{10} background concentration for 2018 10-100 receptors within 20 m of site	Medium

For the purposes of this assessment, ecological receptors are defined in accordance with the IAQM Guidance document and include RAMSAR sites, Special areas of conservation (SACs), potential SACs, candidate SACs, Special Protection Areas (SPAs), potential SPAs, Sites of Special Scientific Interest (SSSIs).

There are no ecological sensitive receptors within 50 m of the boundary of the site; and within 50 m of the route used by construction vehicles on the public highway, up to 500 m from the site entrance. Therefore, no further consideration of dust impact on ecological receptors has been undertaken.

5.1.3 Risk of Impact

The risk of dust impact to both dust soiling and human-health effects for each construction activities are summarised in Table 9.

Table 9 Risk of Impacts

Potential Impact (Sensitivity of the Area)	Dust Risk (Dust Emission Category)				
	Demolition (Medium)	Earthworks (Small)	Construction (Small)	Trackout (Small)	Overall Risk
Dust Soiling (High)	Medium	Low	Low	Medium	n/a
Human-health (Medium)	Low	Negligible	Negligible	Low	n/a
Overall Risk	**Medium**	Low	Low	**Medium**	**Medium**

The dust impact assessment has demonstrated that the risk of dust soiling without any mitigation is Medium for demolition and trackout, Low for earthworks and construction.

The risk of adverse human-health effects of PM_{10} without any mitigation is Low for demolition and trackout and negligible for earthworks and construction.

The overall risk of adverse effects of dust soiling and PM_{10} without any mitigation is Medium for demolition and trackout and Low for earthworks and construction.

The overall risk of impacts is Medium**.**

5.2 Operation Phase

5.2.1 Human Exposure

Air quality conditions for future occupiers and visitors of the Proposed Development have been assessed with reference to Defra modelled backgrounds and LAEI (2016) modelled data, which indicate clear evidence of exceedances of the annual mean NO_2 objective in the vicinity of the Proposed Development. Since local monitoring has indicated general reductions between 2016 and 2018, use of LAEI 2016 modelled data is considered to be conservative and worst case.

- The 2016 annual mean NO_2 concentration map shows that modelled concentrations at the proposed site are expected to range between 43 µg/m^3 and 55 µg/m^3. There is potential for annual mean NO_2 levels across the site to be exceeded. However, the annual mean nitrogen dioxide objective threshold values do not apply to the proposed B1 office use. This is covered under the Building Regulations Approved Document F1, where the WHO guideline value of 40 µg/m^3 is included as a recommended guideline. Suitable mitigation will be required to achieve the recommended value.
- The 2016 annual mean PM_{10} concentration map shows that modelled concentrations at the proposed site are expected to range between 22 µg/m^3 and 28 µg/m^3. These concentrations do not exceed the annual mean objective for PM_{10} but do exceed guidelines included within Building Regulations Approved Document F1, where the WHO guideline value of 20 µg/m^3 is included as a recommended guideline. Suitable mitigation will be required to achieve the recommended value.
- The 2016 annual mean $PM_{2.5}$ concentration map shows that modelled concentrations at the proposed site are expected to range between 13 µg/m^3 and 17 µg/m^3. These concentrations do not exceed the annual mean objective for $PM_{2.5}$ but do exceed guidelines included within Building Regulations Approved Document F1, where the WHO guideline value of 10 µg/m^3 is included as a recommended guideline. Suitable mitigation will be required to achieve the recommended value.

Since modelled NO_2 values are below 60 µg/m^3, it is concluded that there will be no exceedances of the NO_2 1-hour mean objective.

5.3 Air Quality Neutral Assessment

5.3.1 Building Emissions

An estimate of the Total Building Emission Benchmark has been calculated and is presented in Table 10. These data are based upon the area schedule published on 22nd November 2019 (Table 1).

Table 10 Building Emissions Benchmark – NO_2

Land Use	Gross Internal Area (GIA) (m^2)	Pollutant	Emissions Benchmark (g/m^2/annum)	Benchmarked Emissions (kg/annum)
B1 Office	2888.6	NO_X	30.8	89.0

As the latest designs do not include any on-site combustion plant, the Total Building Emission will be less than the Total Building Emissions Benchmark (BEB) for this development and therefore meets Air Quality Neutral requirements.

5.3.2 Transport Emissions

5.3.2.1 Introduction

The Proposed Development is nominally a “car-free” development and it is anticipated that there will be minimal trip generation. In order to demonstrate that the development meets the transport benchmarks, a reveres calculation has been undertaken to calculate the number of vehicle trips which would be required to exceed the threshold.

5.3.2.2 Benchmark Trip Rate

Benchmark trip rates provided in the GLA 80371 guidance are based on values in the Trip Rate Assessment Valid for London (TRAVL) database. TRAVL benchmark trip rates for B1 land use in Inner London are presented in Table 11.

These data are based upon the most recent area schedule published on 22nd November 2019 (Table 1).

Table 11 Back Calculation Table for B1 Use

A. Classification	B. Floor Area (m^2)	C. Emissions Benchmark (g/m^2/annum)	D. NOx Emission (kg/annum)	E. NOx Vehicle Emission Rate (g/veh/km)	F. Average distance travelled by car per trip (km)	G. Trips Required to Exceed Threshold (1000xD) / (ExF)
B1 Office	2888.6	11.4	32.9	0.37	7.7	11558

These calculations indicate that the development would need to generate a total of (11558)/365=33 trips per day to exceed the Air Quality Neutral Benchmark.

It is therefore concluded that the development is “air quality neutral” with respect to transport emissions.

6.0

Mitigation

6.0 Mitigation

6.1 Construction

The primary aim of the dust risk assessment is to identify the appropriate site-specific mitigation measures that will be adopted to ensure there will be no significant effect on local amenity and public health.

Full details of mitigation measures are presented in Appendix E. Monitoring and Non-Road Mobile Machinery (NRMM) Protocols are presented in Appendix F and Appendix G.

The Client will commit to the implementation of the best practice mitigation measures identified above during the construction phase of the development. It is anticipated that the generation of dust and harmful pollutants emissions from construction site activities will be reduced with the correct implementation of these measures.

Additionally, a Construction Management Plan (CMP) which conforms to the requirements of LBC's planning requirements will be submitted in support of the Planning Application.

6.2 Operation Phase

It is anticipated that the impact of the operation phase is likely to be negligible, and therefore no further mitigation measures are required.

Ventilation to all rooms will be based on a minimum fresh air system. Several mechanical ventilation heat recovery (MVHR) units will be located at roof level. Fresh air intakes and exhaust outlet ductwork, at roof level, will be separated to prevent short circuiting and contamination of the fresh air (see Schematic in Appendix H showing MVHR Inlet Positions). Supply and extract ductwork will then distribute vertically through the building to serve the rooms. The use of additional high specification particulate filters is recommended to ensure compliance with Building Regulations Approved Document F guidelines.

Using MVHR to provide an adequate supply of clean air, it is anticipated that the exposure of future occupants to poor air quality will be unlikely and therefore no additional mitigation measures will be required.

6.3 Air Quality Neutral

It has been demonstrated that the development's NO_x building emissions meet the Air Quality Neutral benchmark as there are no on site combustion plant emissions.

The Proposed Development is nominally 'car-free', lying in close proximity to a comprehensive public transport network. The number of trips generated by the development would need to exceed 33 trips per day before the Transport Benchmark was exceeded.

As such, the development is therefore considered to be compliant with the Air Quality Neutral building emissions and transport benchmarks, and no further mitigation measures or additional abatement will be required.

7.0

Discussion and Conclusions

7.0 Conclusions

7.1 Discussion

The assessment findings were reviewed against the London Plan policy and London Mayor's SPG. A summary of the consideration and comments is presented in Table 12.

Table 12 London Planning Consideration

Consideration	Y/N	Comment
London Plan		
Policy 3.2, 5.3, 7.14 Has the development been designed to minimise and mitigate against increased exposure to poor air quality?	Y	MVHR is incorporated into the development design to prevent exposure of future occupants to poor air quality.
Draft New London Plan policy		
Policy SI1 The aim of this policy is to ensure that new developments are designed and built, as far as is possible, to improve local air quality and reduce the extent to which the public are exposed to poor air quality. This means that new developments, as a minimum, must not cause new exceedances of legal air quality standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits. Where limit values are already met or are predicted to be met at the time of completion, new developments must endeavour to maintain the best ambient air quality compatible with sustainable development principles. Has the development been designed to minimise and mitigate against increased exposure to poor air quality?	Y	The development is unlikely to cause new exceedances of air quality standards. MVHR is incorporated into the development design to prevent exposure of future occupants to poor air quality.
SPG Air Quality		
Has the development maximised the contribution the building's design, layout and orientation make to avoiding the increased exposure to poor air quality?	Y	MVHR is incorporated into the development design to prevent exposure of future occupants to poor air quality.
Have air intakes located away from the main source of air pollution?	Y	Air intakes will be located at roof level away from the main source of air pollution.
Has European standard EN 13779 been adhered to, to ensure that air filters are fitted and regularly maintained?	Y	The MVHR system will be regularly maintained in accordance with manufacturer's recommendations.
Has outside space, including gardens, balconies and roof terraces, been screened where practical, and exposure minimised through appropriate positioning and design?	N/A	Not applicable. Members of the public do not have regular access to the roof terraces.
Has the location of equipment resulted in flues and exhaust vents being near recreational areas?	N	No recreation areas are located in the vicinity of the development site.

7.2 Conclusions

With the implementation of the appropriate recommended mitigation measures, it is anticipated that the construction phase impacts of the Proposed Development will not be significant.

The assessment also demonstrated that following appropriate mitigation, exposure of future occupants to poor air quality is unlikely.

Therefore, it is concluded that there are no air quality constraints to the construction and operation of the Proposed Development.

7.0

References

8.0 References

Air Quality Consultants (2014). Air Quality Neutral Planning Support Update: GLA 80371.

Department for Environment, Food and Rural Affairs (Defra) (2015). Interactive monitoring networks map (uk-air.defra.gov.uk/interactive-map).

Department for Environment, Food and Rural Affairs (Defra) (2015). Background Mapping data for local authorities (http://uk-air.defra.gov.uk/data/laqm-background-home).

Department for Environment, Food and Rural Affairs (Defra) (2015). MAGIC (https://magic.defra.gov.uk/).

Department for Environment, Food and Rural Affairs (Defra) (2016). Local Air Quality Management Policy Guidance (PG16).

Department for Environment, Food and Rural Affairs (Defra) (2016). Local Air Quality Management Technical Guidance (TG16).

Department for Environment, Food and Rural Affairs (Defra) (2019). The Clean Air Quality Strategy.

Greater London Authority (GLA) (2014). Sustainable Design and Construction Supplementary Planning Guidance.

Greater London Authority (GLA) (2014). The Control of Dust and Emissions from Construction and Demolition SPG.

Greater London Authority (GLA) (2016). The London Plan.

Greater London Authority (GLA) (2019). The draft New London Plan (https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/draft-london-plan-consolidated-suggested-changes-version-july-2019)

Highway England (2007). Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA 207/07 (DMRB 11.3.1 HA207/07).

HMSO (1990). 'The Environmental Protection Act', London: HMSO.

HMSO (1995). 'The Environment Act', London: HMSO.

HMSO (2002). 'Statutory Instrument 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002', London: HMSO.

HMSO (2010). Statutory Instrument 2010 No. 1001, The Air Quality Standards Regulations 2010, London: HMSO.

Institute of Air Quality Management (IAQM) (2016). Guidance on the assessment of dust from demolition and construction v1.1.

Institute of Air Quality Management (IAQM) (2016). Land-Use Planning and Development Control: Planning for Air Quality.

London Borough of Camden (2019). Air Quality Annual Status Report.

London Borough of Camden (2017). Local Plan.

London Borough of Camden (2019). Air Quality Planning Guidance.

Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework.Department for Environment, Food and Rural Affairs (Defra) (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1).

8.0

Glossary

9.0 Glossary

Term/Acronym	Details
µg/m^3	Micrograms (one-millionth of a gram) per cubic metre of air
AQAP	Air quality action plan
AQMA	Air quality management area. Areas where the air quality objectives are likely to be exceeded. Declared by way of an order issued under the Section 83(1) of the Environment Act 1995.
AQO	Air quality objective. Air quality targets to be achieved locally as set out in the Air Quality Regulations 2000 and subsequent Regulations. Objectives are expressed as pollution concentrations over certain exposure periods, which should be achieved by a specific target date. Some objectives are based on long term exposure (e.g. annual averages), with some based on short term objectives. Objectives only apply where a member of the public may be exposed to pollution over the relevant averaging time.
AQS	Air quality strategy
CPG	Camden Planning Guidance
Defra	Department for Environment, Food and Rural Affairs
ELV	Electric Vehicle
EPUK	Environmental Protection UK
EU	European union
Exceedance	Concentrations of a specified air pollutant greater than the appropriate Air Quality Objective.
GIA	Gross Internal Area
GLA	Greater London Authority
HDV	Heavy duty vehicle
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LA	Local authority
LAQM	Local air quality management
LAQM, TG	Local air quality management technical guidance
LBC	London Borough of Camden
LDV	Light duty vehicle
LGV	Light Goods Vehicle
Limit Values / EU limit values	The maximum pollutant levels set out in the EU Daughter Directives on Air Quality. In some cases, the limit values are the same as the national air quality objective but may allow a longer period for achieving.
LLAQM	London Local Air Quality Planning Guidance
LT	Long-term averaging period (i.e. Annual mean)
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National planning policy framework
PM_{10}	The fraction of particulates in air of very small size (less than 10 micrometres).
$PM_{2.5}$	Fine particles in the (ambient) air 2.5 micrometres or less in size.
SPD	Supplementary Planning Document
SPG	Supplementary Planning Guidance
TA	Transport Assessment
TC	Transport Consultant
TRAVL	Trip Rate Assessment Valid for London

Appendices

Appendix A Scoping Correspondence

Hodgkiss, Glyn

From: Parkes, Tom <Tom.Parkes@camden.gov.uk>
Sent: 21 November 2019 09:14
To: Gubb, Curtis
Cc: Chapman, Mark; Queremel, Carlos
Subject: RE: Scoping and Screening Exercise – Diorama Development

Categories: Filed by Newforma

Hi Curtis,

Please refer to the page about 'Air quality assessments in planning applications' on our website: https://www.camden.gov.uk/air-quality-assessment

The information presented should be sufficient for applicants to determine whether/what type of air quality assessment is required.

You can also seek pre-planning application advice here: https://www.camden.gov.uk/pre-planning-application-advice

Regards,

Tom Parkes
Senior Air Quality Officer

Telephone: 020 7974 4887

From: Gubb, Curtis <c.gubb@cundall.com>
Sent: 20 November 2019 14:17
To: Queremel, Carlos <Carlos.Queremel@camden.gov.uk>
Cc: Parkes, Tom <Tom.Parkes@camden.gov.uk>; Chapman, Mark <m.chapman@cundall.com>
Subject: FW: Scoping and Screening Exercise – Diorama Development

Hi Both,

Could you advise if you have received this scope and screening assessment? Want to ensure the correct person has viewed it.

Many thanks,
Curtis

Curtis Gubb
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From: Gubb, Curtis
Sent: 19 November 2019 10:21
To: 'tom.parkes@camden.gov.uk' <tom.parkes@camden.gov.uk>
Cc: Chapman, Mark <m.chapman@cundall.com>
Subject: Scoping and Screening Exercise – Diorama Development

Hi,

On behalf of our client, we have been instructed to undertake a scoping and screening exercise to ascertain the potential need for an Air Quality Assessment to accompany an application for planning permission for the proposed development at Diorama located 17 – 19 Park Square East.

Site Location

We have reviewed the following phases of the development against guidance from the Institute of Air Quality Management (IAQM) and the GLA and identified the following:

- Construction Phase
  - Impacts
    - The development is considered unlikely to:
      - Have 'ecological receptors' within 50 m of the boundary of the site; or 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s)
    - The development is considered likely to:
      - Have 'human receptors' within 350 m of the boundary of the site; or 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s)
    - In accordance with GLA guidance, an air quality dust risk assessment may be required.
- Operation Phase
  - Exposure
  - Stage 1 Criteria
    - The development is considered unlikely to:
      - Have < 10 residential units and a site area of < 0.5 ha
    - The development is considered likely to:
      - Have more than 1,000 m2 of floor space for all non-residential uses
        - However, it is unlikely to have < 10 parking spaces or a centralised energy facility or combustion process(es)
    - In addition to these criteria, the following is considered:
      - Background and future baseline air quality is considered likely to approach or exceed national air quality objectives
      - There are heavily trafficked roads, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO_2), that would cause unacceptably high exposure for users of the new development
      - There are no sources of odour and/or dust that may affect amenity for future occupants of the development
    - These criteria are more stringent where potential traffic impacts may arise on roads where concentrations are close to the objective.

        - The development does lie within an Air Quality Management Area (AQMA) - as an indicator of local hotspots where the air quality objectives may be exceeded.
        - While, the whole authority is an AQMA , it is anticipated that affected roads are likely to have concentrations above 90% of the objective

        - In accordance with IAQM guidance, as none of the Stage 1 criteria are met there should be no requirement to carry out an air quality assessment for the impacts of the local area's emissions on the proposed development itself, to assess the exposure that residents or users might experience.

    - Impacts
    - Stage 1 Criteria
        - In accordance with IAQM guidance, as none of the Stage 1 criteria are met there should be no requirement to carry out an air quality assessment for the impact of the proposed development on the local area, and the impacts can be considered to have insignificant effects.

- Air Quality Neutral
    - The development is considered unlikely to:
        - Have 10 or more residential dwellings (or an area of more than 0.5 ha)

    - The development is considered likely to:
        - Have a floor space of 1,000 sq. m or more (or the site area is 1 ha or more), for all non-residential uses

    - In accordance with the London Plan, air quality neutral policy would apply to this development.

We intend to progress on the basis that an Air Quality Assessment has not been requested by the Council, unless confirmation of a requirement to undertake one is received.

Many thanks,

Appendix B IAQM Construction Assessment Methodology

Screening (Step 1)

As 'human receptors' were identified within 50 m of the boundary of the site; and within 50 m of the route(s) to be used by construction vehicles on the public highway, up to 500 m from the site entrance, a detailed risk assessment was undertaken.

Dust Emission (Step 2A)

The potential dust emission magnitude for different activities have been defined based on the criteria listed in Table B1.

Table B1 Potential Dust Emission Magnitude Criteria

Stage	Description	Large	Medium	Small
Demolition	Definitions for demolition are:	1. Total building volume >50,000 m^3 2. Potentially dusty construction material (e.g. concrete) 3. On-site crushing and screening 4. Demolition activities >20 m above ground level	5. Total building volume 20,000 m^3 – 50,000 m^3 6. Potentially dusty construction material (e.g. concrete) 7. Demolition activities 10 – 20 m above ground level	8. Total building volume <20,000 m^3 9. Construction material with low potential for dust release (e.g. metal cladding or timber) 10. Demolition activities <10 m above ground, demolition during wetter months
Earthworks	Earthworks will primarily involve excavating material, haulage, tipping, and stockpiling. This may also involve levelling the site and landscaping.	11. Total site area >10,000 m^2 12. Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) 13. >10 heavy earth moving vehicles active at any one-time formation of bunds >8 m in height 14. Total material moved >100,000 tonnes	15. Total site area 2,500 m^2 – 10,000 m^2 16. Moderately dusty soil type (e.g. silt) 17. 5-10 heavy earth moving vehicles active at any one-time formation of bunds 4 m – 8 m in height 18. Total material moved 20,000 tonnes – 100,000 tonnes	19. Total site area <2,500 m^2 20. Soil type with large grain size (e.g. sand) 21. <5 heavy earth moving vehicles active at any one-time formation of bunds <4 m in height 22. Total material moved <20,000 tonnes, earthworks during wetter months
Construction	The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s) / infrastructure, method of construction, construction materials, and duration of build.	23. Total building volume >100,000 m^3 24. On-site concrete batching and sandblasting	25. Total building volume 25,000 m^3 – 100,000 m^3 26. Potentially dusty construction material (e.g. concrete) 27. On-site concrete batching	28. Total building volume <25,000 m^3 29. Construction material with low potential for dust release (e.g. metal cladding or timber)

Stage	Description	Large	Medium	Small
Trackout	Factors which determine the dust emission magnitude are vehicle size, vehicle speed, vehicle numbers, geology, and duration. Only receptors within 50 m of the routes used by vehicles on the public highway and up to 500 m from the site entrances are considered to be at risk from the effects of dust.	30. >50 HDV (>3.5 tonnes) outward movements in any one day 31. Potentially dusty surface material (e.g. high clay content) 32. Unpaved road length >100 m	33. 10-50 HDV (>3.5 tonnes) outward movements in any one day 34. Moderately dusty surface material (e.g. high clay content) 35. Unpaved road length 50 m – 100 m	36. <10 HDV (3.5 tonnes) outward movements in any one day 37. Surface material with low potential for dust release 38. Unpaved road length <50 m

Sensitivity of the Area (Step 2B)

The sensitivity of the area takes account of a number of factors:

1. The specific sensitivities of receptors in the area;
2. The proximity and number of those receptors;
3. In the case of PM_{10}, the local background concentration; and
4. Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table B2 provides guidance on the sensitivity of different types of receptor.

Table B2 Sensitivities of People to Dust Soiling Effects, Health Effects of PM_{10}, and Sensitivities of Receptors to Ecological Effects

Description	High Sensitivity Receptor	Medium Sensitivity Receptor	Low Sensitivity Receptor
Sensitivities of People to Dust Soiling Effects	1. Users can reasonably expect enjoyment of a high level of amenity 2. The appearance, aesthetics, or value of their property would be diminished by soiling 3. The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land 4. Indicative examples include dwellings, museums, and other culturally important collections, medium, and long-term car parks, and car showrooms	5. Users would expect a to enjoy a reasonable level of amenity, but would not reasonably expect a to enjoy the same level of amenity as in their home 6. The appearance, aesthetics, or value of their property could be diminished by soiling 7. The people or property wouldn't reasonably be expected a to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land 8. Indicative examples include parks and places of work	9. The enjoyment of amenity would not reasonably be expected; or 10. Property would not reasonably be expected a to be diminished in appearance, aesthetics, or value by soiling 11. There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land 12. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short-term car parks, and roads
Sensitivities of People to the Health Effects of PM_{10}	13. Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day) 14. Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment	15. Locations where the people exposed are workers d, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). 16. Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation	17. Locations where human exposure is transient. 18. Indicative examples include public footpaths, playing fields, parks, and shopping streets

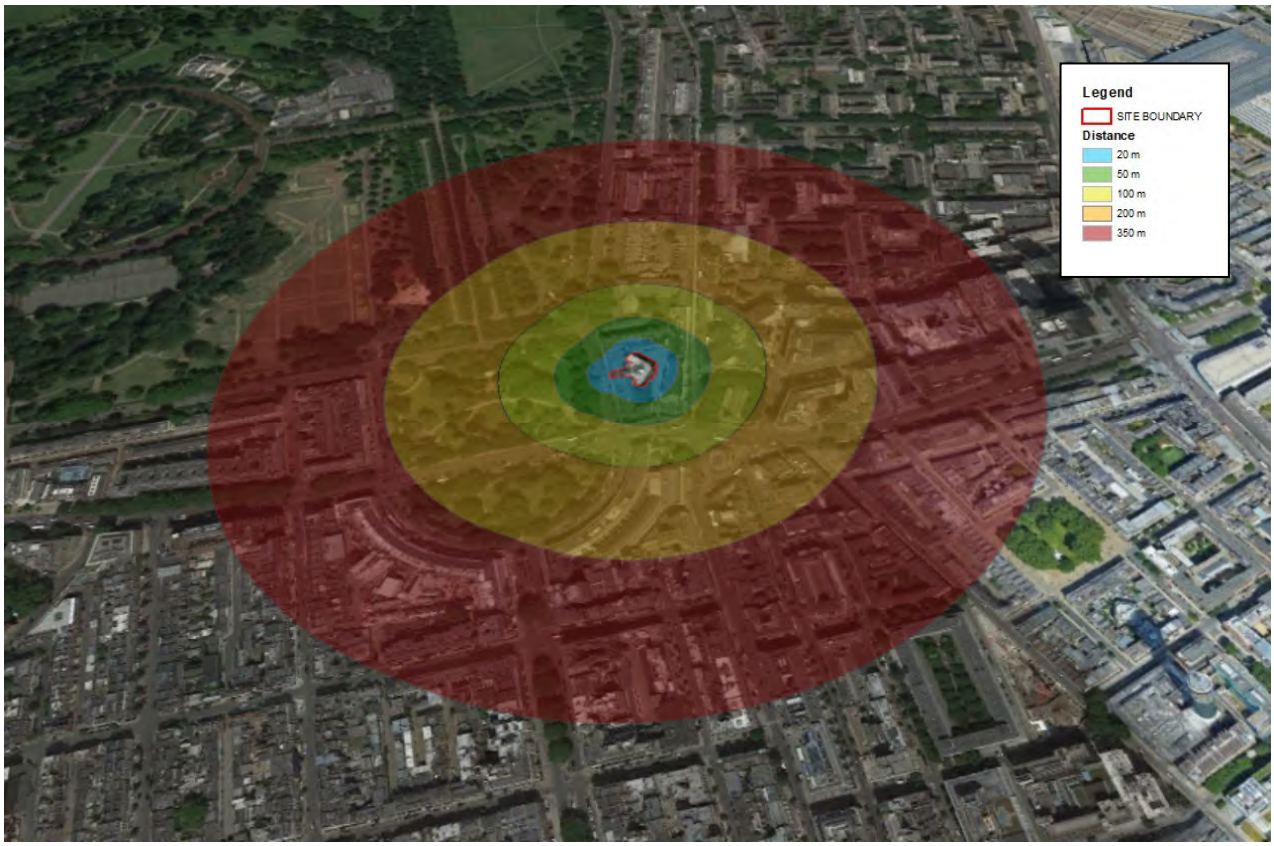
Description	High Sensitivity Receptor	Medium Sensitivity Receptor	Low Sensitivity Receptor
Sensitivities of Receptors to Ecological Effects	19. Locations with an international or National designation and the designated features may be affected by dust soiling 20. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain 21. Indicative examples include a Special Area of Conservation designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings	22. Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown 23. Locations with a National designation where the features may be affected by dust deposition 24. Indicative example is a Site of Special Scientific Interest with dust sensitive features	25. Locations with a local designation where the features may be affected by dust deposition. 26. Indicative example is a local Nature Reserve with dust sensitive features

Full details of the sensitivities of receptors are provided in the IAQM Guidance document.

Table B3, Table B4, and Table B5 show how the sensitivity of the area has been determined for dust soiling, human-health, and ecosystem impacts respectively.

The distance bandings applied to the site are illustrated in Figure 9.

Figure 9 Construction Dust Buffer Zones



These tables take account of several factors which may influence the sensitivity of the area. The highest level of sensitivity from each table has been recorded.

Table B3 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table B4 Sensitivity of the Area to Human-Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors [d]	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<28	>10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Table B5 Sensitivity of the Area to Ecological Impact

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

The highest level of sensitivity from each table has been recorded. Professional judgement has been used to determine alternative sensitivity categories with consideration of additional factors, such as any pre-existing screening between the source and the receptors, the season during which the works will take place, and duration of the potential impact.

Risk of Impact Definition

The dust emission magnitude (Step 2A) was combined with the sensitivity of the area (Step 2B) to determine the risk of impact with no mitigation applied. Table B6 – Table B9 provide the method of assigning the level of risk of each activity and used to determine the level of site-specific mitigation.

Table B6 Risk of Impact – Demolition

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

Table B7 Risk of Impact – Earthworks

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

Table B8 Risk of Impact – Construction

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

Table B9 Risk of Impact – Trackout

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

Appendix C IAQM Local Air Quality Assessment Screening Criteria

Comparison Against IAQM Criteria

IAQM's guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' (updated in January 2017) was issued to ensure that air quality is adequately considered in the land-use planning and developmental control process.

It provides a decision-making process which assists with the understanding of air quality impacts and implications because of development proposals. It provides a framework for air quality considerations within local development control processes, promoting a consistent approach to the treatment of air quality issues within development control decisions.

The guidance includes a method for screening the requirement for an air quality assessment, the undertaking of an air quality assessment, the determination of the air quality impact associated with a development proposal and whether this impact is significant.

The guidance also provides some clarification as to when air quality constitutes a material consideration and highlights the links to other relevant issues (for example traffic speed reduction measure and the use of alternative technology to provide energy) and the importance of the understanding of these with the input from other discipline specialists. The 'creeping baseline' is another issue raised about cumulative impacts.

The guidance note is widely accepted as the most appropriate reference method for this purpose. This guidance refers to the Town and Country Planning (Development Management Procedure) Order (England) 2010 [(Wales) 2012] definition of a 'major' development when scoping assessments required for the planning process.

A 'major' development includes developments where:

- The number of dwellings is 10 or above;
- The residential development is carried out of a site of more than 0.5ha where the number of dwellings is unknown;
- The provision of more than 1,000m^2 commercial floor space; or,
- Development carried out on land of 1ha or more.

There are two types of air quality impacts to be considered:

- The impact of existing sources in the local area on the Proposed Development (governed by background pollutant levels and proximity to sources of air pollution); and,
- The impacts of the Proposed Development on the local area.

Regarding the changes in air quality or exposure to air pollution, the guidance indicates that each local authority will be likely to have their own view on the significance of this; these are to be described in relation to whether a National Air Quality Objective (NAQO)predicted to be met, or at risk of not being met. Exceedances of these objectives are considered as significant, if not mitigated.

As part of the impact of the Proposed Development on the local area, a two-staged assessment is recommended as per current guidance.

Stage 1: Determines whether an air quality assessment is required. In order to proceed to Stage 2, it requires any of the criteria under (A) coupled with any of the criteria under (B) in Table F1 to apply.

Stage 2: Where an assessment is deemed appropriate, this may take the form of a Simple Assessment or a Detailed Assessment, using suitable guidance provided in Table C2.

Table C1 Stage 1 Criteria

Criteria to Proceed to Stage 2
A. If any of the following apply: • 10 or more residential units of a site area of more than 0.5ha • More than 1,000 m^2 of floor space for all other uses or a site area greater than 1ha
B. Coupled with any of the following: • The development has more than 10 parking spaces • The development will have a centralised energy facility or other centralised combustion process **Note:** Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Table C2 Indicative Criteria for Requiring an Air Quality Assessment

The Development will	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic slows on local roads with relevant receptors. **(LDV = cars and small vans <3.5t gross vehicle weight).**	A change of LDV flows of: • More than 100 AADT within or adjacent to an Air Quality Management Area (AQMA) • More than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. **(HDV = goods vehicles + buses >3.5t gross vehicle weight).**	A Change of HDV flows of: • More than 25 AADT within or adjacent to an AQMA • More than 100AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. Traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: • More than 25 AADT within or adjacent to an AQMA • More than 100AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. **NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.**	Typically, any combustion plant where the single or combined NOx 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. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.

The Development will	Indicative Criteria to Proceed to an Air Quality Assessment
	Conversely, where existing NO_2 concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

Impact Descriptors for Individual Receptors

The IAQM guidance contains a two Stage process for determining the likely significant effects of the impacts on air quality:

- A qualitative or quantitative description of the impacts on local air quality arising from the development; and
- A judgement on the overall significance of the effects of any impacts.

A framework for describing the impacts is set out in IAQM guidance and summarised in Table C3 below.

Table C3 Impact Descriptors

Long-term average concentration at receptor in assessment year	**% Change in concentration relative to Air Quality Assessment Level (AQAL)**			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

For air quality impacts arising from surrounding sources on new occupants of a development, then the impacts are best described in relation to whether an air quality objective will not be met or is at risk of not being met. Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provisions is made to reduce their exposure by some means.

Changes of less than 0.5%, will be described as Negligible.

Appendix D Results of Screening Assessment

Table D1 Indicative Criteria for Requiring a Detailed Air Quality Assessment

Where the Development will:	Indicative Criteria to Proceed to an Air Quality Assessment	Information Relevant to the Proposed Development
1. Cause a significant change in Light Duty Vehicle (LDV) traffic slows on local roads with relevant receptors.	IAQM Guidance states a change of LDV flows of: • More than 100 AADT within or adjacent to an Air Quality Management Area (AQMA) • More than 500 AADT elsewhere.	The development will generate less than 100 daily vehicle trips, therefore further assessment of increased transport emissions was scoped out of further assessment (dispersion modelling)
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors.	A Change of HDV flows of: • More than 25 AADT within or adjacent to an AQMA • More than 100 AADT elsewhere.	No increase in HDV flows is predicted
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA	No realignment of >5m proposed
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. Traffic lights, or roundabouts.	No new junctions proposed
5. Introduce or change a bus station.	Where bus flows will change by: • More than 25 AADT within or adjacent to an AQMA • More than 100 AADT elsewhere.	No bus station proposed
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).	No underground car parking proposed
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.	Typically, any combustion plant where the single or combined NOx 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.	Air source heat pumps have been used instead of gas fired boilers and CHP plant. No combustion plant included.

Appendix E Mitigation Measures for Construction

Primary measures are those that will be implemented at all times; Secondary measures will be implemented as necessary (in agreement with the local authority), while n/a measures are not required for a given level of risk.

Table E.1 Construction Mitigation Measures- Site Management

Site Management		Low Risk	Medium Risk	High Risk
1.	Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.	Primary		
2.	Display the head or regional office contact information.	Primary		
3.	Record and respond to all dust and air quality pollutant emissions complaints.	Primary		
4.	Make a complaint log available to the local authority.	Primary		
5.	Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority.	Primary		
6.	Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry, or windy conditions.	Primary		
7.	Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.	Primary		
8.	Develop and implement a **stakeholder communications plan** that includes community engagement before work commences on-site.	n/a	Primary	
9.	Develop a **dust management plan**.	n/a	Primary	
10.	Hold regular liaison meetings with other high-risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.	n/a		Primary

Table E2 Construction Mitigation Measures- Preparing and Maintaining the Site

Preparing and Maintaining the Site	Low Risk	Medium Risk	High Risk
11. Plan site layout: machinery and dust causing activities will be located away from receptors.	Primary		
12. Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on-site.	Primary		
13. Avoid site runoff of water or mud.	Primary		
14. Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	Secondary	Primary	
15. Keep site fencing, barriers, and scaffolding clean using wet methods.	Secondary	Primary	
16. Remove materials from site as soon as possible.	Secondary	Primary	
17. Cover, seed, or fence stockpiles to prevent wind whipping.	Secondary	Primary	
18. Agree monitoring locations with the local authority.	n/a	Primary	
19. Where possible, commence baseline monitoring at least three months before phase begins.	n/a	Primary	
20. Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.	n/a	Primary	
21. Carry out regular dust soiling checks of buildings within 100 m of site boundary and cleaning to be provided.	n/a	Secondary	Primary
22. Install green walls, screens, or other green infrastructure to minimise the impact of dust and pollution.	n/a	Secondary	
23. Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.	n/a		Secondary

Table E3 Construction Mitigation Measures- Operating Vehicle/Machinery and Sustainable Travel

Operating Vehicle/Machinery and Sustainable Travel	Low Risk	Medium Risk	High Risk
24. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.	Primary		
25. Ensure all non-road mobile machinery (NRMM) comply with the standards set within the SPG.	Primary		
26. Ensure all vehicles switch off engines when stationary – no idling vehicles.	Primary		
27. Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment.	Primary		
28. Implement a **Travel Plan** that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	n/a	Secondary	Primary
29. Produce a **Construction Logistics Plan** to manage the sustainable delivery of goods and materials.	n/a	Primary	
30. Impose and signpost a maximum-speed-limit of 10 mph on surfaced haul routes and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority).	Secondary		Primary

Table E4 Construction Mitigation Measures- Operations

Operations	Low Risk	Medium Risk	High Risk
31. Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	Primary		
32. Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water).	Primary		
33. Use enclosed chutes, conveyors, and covered skips.	Primary		
34. Minimise drop heights from conveyors, loading shovels, hoppers, and other loading, or handling equipment, and use fine water sprays on such equipment.	Primary		
35. Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	n/a	Primary	

Table E5 Construction Mitigation Measures- Waste Management Activities

Waste Management	Low Risk	Medium Risk	High Risk
36. Reuse and recycle waste to reduce dust from waste materials	Primary		
37. Avoid bonfires and burning of waste materials.	Primary		

Table E6 Construction Mitigation Measures- Demolition Activities

Measurement Specific to Demolition	Low Risk	Medium Risk	High Risk
38. Ensure water suppression is used during demolition operations.	Primary		
39. Avoid explosive blasting, using appropriate manual, or mechanical alternatives.	Primary		
40. Bag and remove any biological debris or damp down such material before demolition.	Primary		
41. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	Secondary		Primary

Table E7 Construction Mitigation Measures- Earthworks Activities

Measurement Specific to Earthworks	Low Risk	Medium Risk	High Risk
42. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.	n/a	Secondary	Primary
43. Use Hessian, mulches, or trackifiers where it is not possible to re-vegetate or cover with topsoil.	n/a	Secondary	Primary
44. Only remove secure covers in small areas during work and not all at once.	n/a	Secondary	Primary

Table E8 Construction Mitigation Measures- Construction Activities

Measurement Specific to Construction	Low Risk	Medium Risk	High Risk
45. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Secondary	Primary	
46. Avoid scabbling (roughening of concrete surfaces) if possible	Secondary		Primary
47. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	n/a	Secondary	Primary
48. For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	n/a	Secondary	

Table E9 Construction Mitigation Measures- Trackout Activities

Measures Specific To Trackout	Low Risk	Medium Risk	High Risk
49. Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.	Secondary	Primary	
50. Avoid dry sweeping of large areas.	Secondary	Primary	
51. Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.	Secondary	Primary	
52. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site).	Secondary	Primary	
53. Record all inspections of haul routes and any subsequent action in a site log book.	Secondary	Primary	
54. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned.	n/a	Primary	
55. Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;	n/a	Primary	
56. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size, and layout permits.	n/a	Primary	
57. Access gates to be located at least 10 m from receptors where possible.	n/a	Primary	
58. Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.	n/a	Secondary	Primary

Appendix F Site Monitoring Protocol

Best practice monitoring methods that may be required by local planning authority are set out in the SPG Appendix 8.

The required monitoring protocol is also summarised below.

Table F1 Monitoring Protocol

Risk	Protocol
Low Risk	1. Take into account the impact of air quality and dust on occupational exposure standards to minimise worker exposure and breaches of AQO that may occur outside the site boundary, such as by visual assessment 2. Keep an accurate log of complaints from the public, and the measures taken to address any complaints
Medium Risk **As for Low Risk sites PLUS**	3. Determine prevailing wind direction across the site using data from a nearby weather station 4. Set up a line across the site according to the direction of the prevailing wind and operate a minimum of two automatic particulate monitors to measure PM_{10} concentrations at either end of the transect – either inside or outside the site boundary. These instruments should provide data that can be downloaded in real-time by the local authority 5. Identify which location(s) need to be monitored and set up an automatic particulate monitor at each of these to measure representative PM_{10} concentrations. These instruments should provide data that can be downloaded in real-time by the local authority 6. Supplement PM_{10} monitoring with hand-held monitors to get on-the-spot readings at selected points, such as close to sensitive receptors 7. Consider also monitoring dust deposition and soiling rate as these can be used to indicate nuisance
High Risk **As for Medium Risk sites PLUS**	8. Set up a weather station on-site to measure local wind direction and speed 9. Carry out a visual inspection of site activities, dust controls and site conditions and record in a daily dust log; 10. Identify a responsible trained person on-site for dust monitoring who can access real-time PM_{10} data from automatic monitors (e.g., at hourly, or 15-minute intervals). Ensure that adequate quality assurance/quality control is in place 11. Agree a procedure to notify the local authority, so that immediate, and appropriate measures can be put in place to rectify any problem. Alert mechanisms could include email, texts, or alarm systems

Appendix G Non-Road Mobile Machinery (NRMM)

Developers and contractors should meet compliance with 2015 emission standards for NRMM. SPG Appendix 7 Figure 7.1 summarises the requirement of NRMM emissions for 2015.

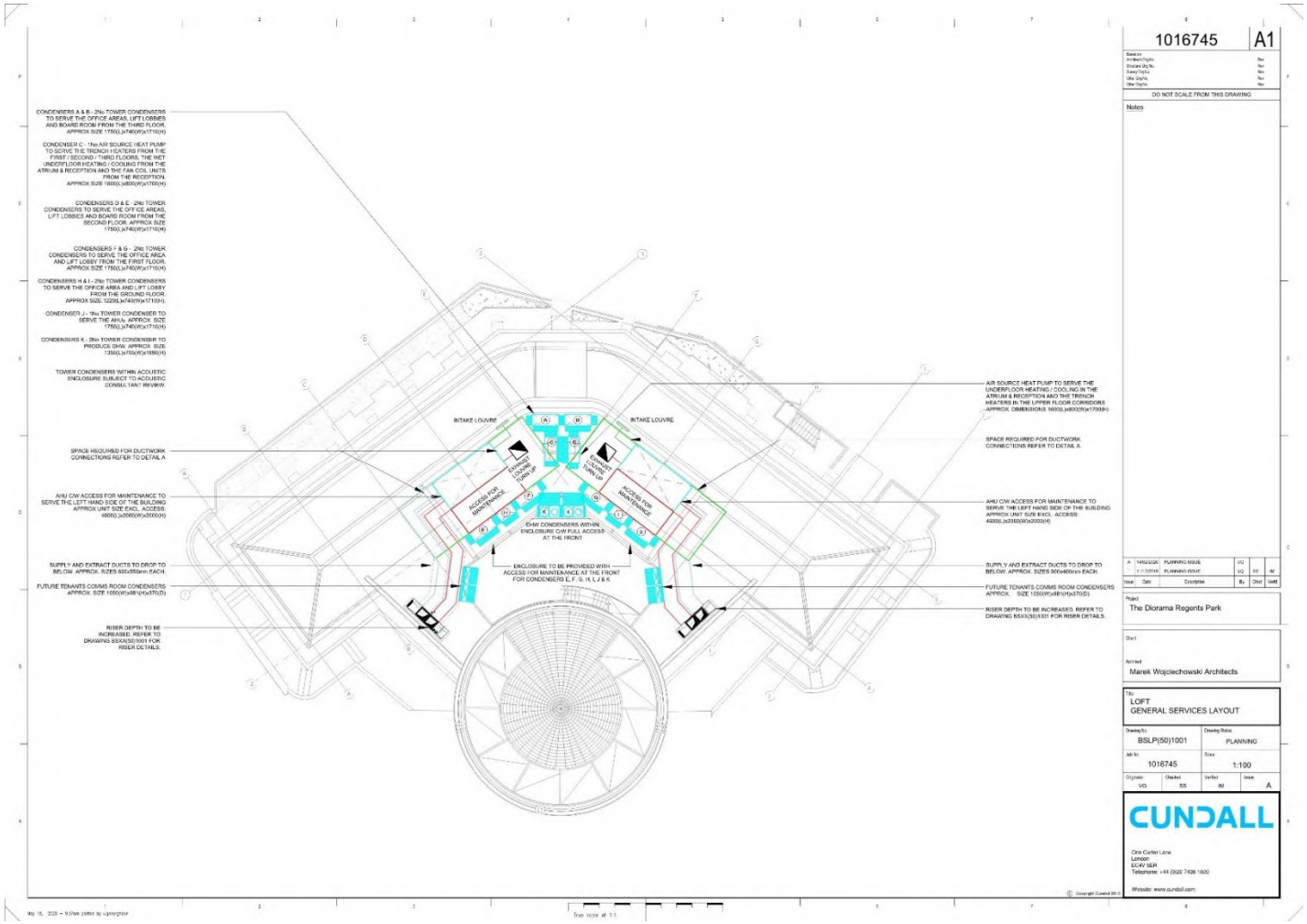
From 1 September 2015 NRMM of net power between 37 kW and 560 kW

- Used in London will be required to meet the standards set out below. This will apply to both variable and constant speed engines for both NO_x and Particulate Matter. These standards will be based upon engine emissions standards set in EU Directive 97/68/EC and its subsequent amendments.
- NRMM used on the site of any major development within Greater London will be required to meet Stage IIIA of the Directive as a minimum; and
- NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IIIB of the Directive as a minimum.

The requirements set out above may be met using the following techniques;

- Reorganisation of NRMM fleet
- Replacing equipment (with new or second-hand equipment which meets the policy)
- Retrofit abatement technologies
- Re-engineering

Appendix H Schematic Showing MVHR Inlet Positions



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