

Appendix 3.3

AIR QUALITY REPORT

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5 KINGDOM STREET AIR QUALITY REPORT

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1. INTRODUCTION

- 1.0.1 Ramboll UK Limited (Ramboll) was appointed by British Land to undertake a Local Air Quality Assessment for 5 Kingdom Street, Paddington Central, London.

1.1 Background

- 1.1.1 A full planning application for a proposed mixed-use development at 5 Kingdom Street, Paddington Central, was submitted by British Land ('The Applicant') to Westminster City Council ('WCC') in May 2019 (received and validated by WCC on 14 May 2019 (WCC Planning Reference 19/03673/FULL). The planning application was considered at WCC Planning Committee on 7 January 2020. The Committee resolved to refuse planning permission (in line with the planning case officer's recommendation) on the following grounds: "Subject to referral to the Mayor of London, resolve to refuse permission on design, townscape and heritage asset grounds."
- 1.1.2 The planning application has since been "called in" by the Mayor of London for determination (under article 7 of the Mayor of London Order and the powers conferred by Section 2A of the 1990 Town and Country Planning Act) (Greater London Authority (GLA) reference: 4925).

1.2 Development Proposals

- 1.2.1 Following consultations with the GLA, a number of amendments have been made to the original proposals set out in the planning application and assessed in the air quality assessment. The original report has therefore been updated to take account of changes to the scheme design. The revised scheme description is provided in the following paragraphs.
- 1.2.2 The development consists of an office building of ground floor with mezzanine plus 18 stories plus plant, and a three-storey base below Kingdom Street. This 'base' connects to the Kingdom Street basement level, and to the 'Crossrail box' below over two storeys. The gross total general internal area (GIA) of the proposed development is 65,928 sqm.
- 1.2.3 High quality office use floorspace (B1(a)) will be provided on Ground Floor Level and Levels 01 to 18. Internal office ancillary space is also proposed on all floors between Lower Ground Floor Level and Level 19, including an office reception on the Mezzanine level. An outdoor amenity space is also proposed at this level. Rooftop outdoor office amenity space is proposed on Level 18 and on Level 19. Flexible retail floorspace is also proposed on Ground Floor Level comprising of A1 (shops and retail outlets) and A3 (food and drink).
- 1.2.4 A publicly accessible internal garden space ('the Garden') is proposed on Lower Ground Floor Level and Upper Box Level, creating a public pedestrian route from Kingdom Street to Harrow Road, sheltered from the elements. This internal link will create a new east to west route through the building connecting Paddington Station to Royal Oak and Warwick Avenue.
- 1.2.5 The proposed development will be 'car-free', except for two parking spaces for disabled drivers, which will be provided at Lower Ground Floor Level in the eastern part of the application site. Servicing will be provided via a service road accessed from Harrow Road at Lower Box Level. A loading bay will be provided at this level on the western side of the building.
- 1.2.6 External public realm improvements are proposed both at Ground Floor Level (Kingdom Street) to the east of the building and at Lower Ground Floor Level (Harrow Road) to the west of the building.

- 1.2.7 The proposed scheme amendments have not resulted in any changes to the construction methodology or the length of the construction period, as set out in Chapter 5: Construction Strategy, in Volume II of the original ES. However, due to the time that has passed since the original planning application was submitted in May 2019, the entire construction programme has been delayed by 14 months. As a result of this change, the opening year of the scheme has been amended from 2024 to 2025.
- 1.2.8 Prior to construction of the scheme, site clearance and preparation works will be undertaken, including the removal of hardstanding areas at track level. Approximately half of the existing podium structure will be retained, with the other half being demolished. The temporary, two-storey building on the podium structure, related to the planning consent (Ref 16/12331/FULL), will be removed.
- 1.2.9 The proposed energy strategy is for a heating/cooling system comprised of air and water source heat pumps (HP) in combination with hybrid air cooled chillers. Gas fired boilers which were part of the original planning application have been removed and therefore an analysis of energy centre emissions has been removed from this report.
- 1.2.10 The building will utilise mechanical ventilation throughout. The Garden will be fully enclosed with the option of openable windows. Further details are provided in Section 5.
- 1.2.11 Construction vehicles are anticipated to be an average of 30 Heavy Goods Vehicles (HGVs) a day and an average of less than 10 Light Goods Vehicles (LGVs) a day. Some peak months could see HGVs numbers rise to approximately 38-44 a day (one third of the construction period). However, the application site is accessible directly from the Strategic Road Network, where vehicles would approach from the east or west bound carriageway of the A40 Westway by joining the A404 Harrow Road and entering site using the existing Paddington Central service road entrance and are therefore unlikely to use local residential roads in the vicinity of the application site.
- 1.2.12 Daily trip generation associated with servicing the proposed development once operational has been estimated to be a total of 105 vehicle movements in and out of which 10% (10 vehicles) are estimated to be HGVs. The majority of these vehicles are most likely to be using the Strategic Road Network (as detailed above) and also unlikely to be using local residential roads in the vicinity of the application site. The impact of servicing and delivery vehicles has been assessed by dispersion modelling and the results reported in a Technical Note 1620001486/AQ/01, 13/08/2019 the relevant parts of which are included as Appendix D to this report.

1.3 Site Description

- 1.3.1 The site is located at Grid Reference 526113, 181601 and is within the jurisdiction of Westminster City Council (WCC).
- 1.3.2 The application site covers an area of 1.26 hectares at its largest extent at Track Level and is bounded by Harrow Road to the north, Harrow Road and Westbourne Bridge to the west, the railway lines into and out of Paddington station to the south and other plots within the Paddington Central campus to the east. The extent of the red line boundary varies between ground level ('track level'), Harrow Road level, and Kingdom Street level.

1.4 Scope of Assessment

- 1.4.1 The following matters have been considered within this report:
- Existing air quality at the application site and in the surrounding area;

- Dust and other emissions during construction which could lead to nuisance and a deterioration in local air quality;
- The suitability of the site for its intended use; and
- The impact of servicing vehicles on local air quality.

1.4.2 The reasoning for this scope is provided in more detail in Section 5.

2. AIR QUALITY PLANNING POLICY AND GUIDANCE

2.1 Background

2.1.1 Local air quality is monitored and managed under a range of national and international legislation which sets out procedures, guidelines and standard limits for specific commonly occurring air pollutants.

2.2 The European Air Quality Directives 2008/50/EC

2.2.1 European Union (EU) Directive 2008/50/EC (1) on ambient air quality and cleaner air for Europe (the CAFE directive) sets out the ambient air quality standards for nitrogen dioxide (NO₂) and particulate matter with an aerodynamic diameter of less than 10 µm (PM₁₀) to be achieved by 1 January 2010 and 2005 respectively. The Air Quality Standards Regulations 2010 (2) implements the requirements of the Directive into United Kingdom (UK) legislation.

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

2.2.3 Compliance with the EU limit values is mandatory. However, member states can apply for a time extension for compliance, subject to approval of an action plan by the European Commission.

2.2.4 In July 2017, the Department for Environment Food and Rural Affairs (Defra) on behalf of the UK Government produced a new plan to improve air quality in the UK in order to meet the EU limit values in the shortest possible time. An overview document has been produced (3), together with a detailed plan (4) which identifies the local authority areas that will require additional measures to ensure compliance with NO₂ objectives.

2.3 Local Air Quality Management (LAQM)

2.3.1 Part IV of the Environment Act 1995 (5) requires the UK Government to publish an Air Quality Strategy and local authorities to review, assess and manage air quality within their areas. This is known as Local Air Quality Management (LAQM).

2.3.2 The Air Quality (England) Regulations 2000 (6) and the Air Quality (Amendment) (England) Regulations 2002 (7) sets out the National Air Quality Objectives (NAQOs) for the protection of human health and vegetation for 11 pollutants.

2.3.3 Where any of the prescribed air quality objectives are not likely to be achieved the authority concerned must designate an Air Quality Management Area (AQMA).

2.3.4 For each AQMA the local authority has a duty to draw-up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives. Local authorities are not statutorily obliged to meet the objectives, but they must show that they are working towards them.

2.3.5 The objectives for NO₂, PM₁₀ and PM_{2.5} which are potentially relevant to this assessment are as follows:

2.3.6 For NO₂:

- The long-term objective is an annual mean concentration of 40 µg/m³ to be achieved by 31 December 2005 and maintained thereafter; and
- The short-term objective is a one-hour mean concentration of 200 µg/m³ not to be exceeded more than 18 times per year to be achieved by 31 December 2005 and maintained thereafter.

2.3.7 For PM₁₀:

- The long-term objective is an annual mean concentration of 40 µg/m³ to be achieved by 31 December 2004 and maintained thereafter; and
- The short-term objective is a 24-hour mean concentration of 50 µg/m³ not to be exceeded more than 35 times per year to be achieved by 31 December 2004 and maintained thereafter.

2.3.8 For PM_{2.5}:

- The long-term objective is an annual mean concentration of 25 µg/m³ to be achieved by 2020, with a 15% reduction in urban background concentrations between 2010 and 2020;
- There is no short-term PM_{2.5} objective; and
- The World Health Organisation (WHO) (8) have issued a guideline value for annual mean PM_{2.5} concentration of 10 µg/m³ and the 2019 Clean Air Strategy (see below) sets a long-term target of the UK achieving the WHO guideline value.

2.3.9 The objectives apply at locations where members of the public would be exposed over the relevant exposure period. For example, the annual mean objective applies at the building façades of residential properties and public buildings, but does not apply in gardens of residential properties, at the building façades of offices or other places of work or at kerbside locations where public exposure would be short term. The one hour mean objective would apply at any outdoor location where members of the public might reasonably be expected to spend an hour or longer, for example a garden or balcony.

2.3.10 Due to the nature of the proposed development, only the short term NAQOs are relevant for the site suitability, i.e. only NO₂ and PM₁₀ concentrations are relevant to the assessment. Research, (9), (10) has concluded that exceedances of the one-hour mean objective are unlikely to occur where NO₂ annual mean concentrations do not exceed 60 µg/m³. This relationship has been used to assess whether exceedances of the hourly mean objective are likely. For PM₁₀, an annual mean of 32µg/m³ is considered to be equivalent to 35 days at or above 50µg/m³ (11), therefore this relationship has been used to assess whether exceedances of the daily mean objective are likely.

2.4 Clean Air Strategy 2019

2.4.1 The Clean Air Strategy (12) published in 2019 sets out a framework for reducing hazards to health from air pollution, focusing on England, to ensure compliance with the air quality objectives set by national government.

2.5 The National Planning Policy Framework (NPPF)

- 2.5.1 The National Planning Policy Framework (NPPF) (13) sets out the Government's planning policies for England and how these are expected to be applied.
- 2.5.2 NPPF advises that the planning system prevent both new and existing development from contributing to or being put at unacceptable risk from or being adversely affected by unacceptable levels of air pollution.

2.6 Regional Policy

2.6.1 The London Plan

The London Plan (14) Consolidated with Alterations since 2011 provides strategic planning guidance for Greater London. Each Borough's development plans must be in 'general conformity' with it.

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

- *"Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs)) and where development is likely to be used by large numbers of people vulnerable to poor air quality, such as steps to promote greater use of sustainable transport modes;*
- *Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the Greater London Authority and London Councils 'The control of dust and emissions from construction and demolition';*
- *Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as AQMAs);*
- *Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where this provision is demonstrated to be impractical or inappropriate, and that is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint-area based approaches; and*
- *Where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified".*

2.6.2 Draft New London Plan

The London Plan: The Spatial Development Strategy for Greater London (Draft London Plan) (15) was published for public consultation in December 2017 and sets out the Mayor of London's overall strategic plan for London. The Draft London Plan runs from 2019 to 2041 in order to provide a longer-term view of London's development to inform decision making.

The Examination in Public on the London Plan was held between January and May 2019. The Panel of Inspectors appointed by the Secretary of State issued their report and recommendations to the Mayor on 8th October 2019. The Mayor has considered the Inspectors' recommendations and, on the 9th December 2019, issued to the Secretary of State his intention to publish the London Plan along with a clean and tracked version of the Intend to Publish London Plan, a statement of reasons for any of the Inspectors' recommendations that the Mayor does not wish to accept and a note that sets out a range of interventions that will help achieve the housing delivery set out in the Plan.

The London Plan Intend to publish version Policy Planning (16) policy GG3 on Creating a healthy City states:

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

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

Policy D3 on Optimising site capacity through the design-led approach states:

"B Development proposals should:

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

Policy SI 1 on Improving Air Quality states:

"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 should demonstrate that design measures have been used to minimise exposure.

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

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

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 guidance.

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

2.6.3 London Environmental Strategy

The London Environmental Strategy (17) published in May 2018, aims, among other objectives:

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

Chapter 4 on Air Quality includes a series of objectives, policies and proposals to improve air quality. Several key issues have been highlighted to be addressed in the strategy:

- *Achieving legal compliance as quickly as possible;*
- *Diesel vehicles, especially cars and vans;*
- *Tackling all sources of pollution;*
- *Government action;*
- *Maximising co-benefits between air quality and climate change policies; and*
- *Further reductions are needed in PM₁₀ and PM_{2.5}, particularly from transboundary pollution, tyre and brake wear, and wood burning.*

2.7 Local Air Quality Management in Westminster

2.7.1 Westminster City Council (WCC) has declared an Air Quality Management Area (AQMA) for NO₂ and PM₁₀, covering the whole of the borough. WCC's air quality assessment work has shown that concentrations in many parts of Westminster exceed the objectives for these pollutants. In particular, emissions from road traffic have caused elevated concentrations close to busy and congested roads.

2.7.2 WCC's Air Quality Action Plan (AQAP) (18) was most recently updated and published in December 2019. The AQAP sets out 5 themes; Monitoring air quality, Reducing emissions from buildings and new development, Reducing emissions from transport, Awareness raising and Lobbying and partnership working.

2.8 Westminster's City Plan

2.8.1 WCC's latest City Plan was adopted on 9 November 2016 (19). Policy S31 set out below relates to air quality:

POLICY S31 AIR QUALITY

The council will require a reduction of air pollution, with the aim of meeting the objectives for pollutants set out in the national strategy.

Developments will minimise emissions of air pollution from both static and traffic-generated sources.

Developments that include uses that are more vulnerable to air pollution (Air Quality Sensitive Receptors) will minimise the impact of poor air quality on occupants through the design of the building and appropriate technology.

2.8.2 Other policies which crossover with air quality and that are relevant to this development are set out below:

POLICY S41 PEDESTRIAN MOVEMENT AND SUSTAINABLE TRANSPORT

All developments will prioritise pedestrian movement and the creation of a convenient, attractive and safe pedestrian environment, with particular emphasis in areas with high pedestrian volumes or peaks.

Sustainable transport options will be supported and provided for, including the following priorities:

- *Providing for cycling facilities as part of all new development, including facilities for residents, workers and visitors as appropriate;*
- *Reducing reliance on private motor vehicles and single person motor vehicle trips;*
- *Prioritising parking provision for disabled, car sharing and alternative fuel vehicles;*
- *Encouraging use of alternative sustainable fuels and technology;*
- *Developing water-based river transport where land provision and biodiversity considerations allow.*

POLICY S42 SERVICING AND DELIVERIES

Developments must demonstrate that the freight, servicing and deliveries required will be managed in such a way that minimises adverse impacts. This may include the provision of off-site consolidation centres, shared delivery arrangements, and/or restrictions on the types of vehicles or timing of deliveries, especially where the quality of the public realm, local pollution, and/or function and reliability of the transport network would be otherwise compromised.

Servicing and delivery needs will be fully met within each development site, except where the council considers that this is not possible, in which case the servicing and delivery needs will be met in such a way that minimises the adverse effects on other highway and public realm users, and other residential or commercial activity. Where some or all of the servicing and delivery needs are met through use of the public highway, the development will meet the initial and on-going costs associated with that use of the public highway.

- 2.8.3 The council is currently working on a review of its City Plan. WCC submitted the City Plan 2019-2040 to the Secretary of State on 19 November 2019. The 'Examination in Public' has now started, which is the last stage of the plan-making process. This document (20) states the following with regards to air quality:

"33. Air quality

- A. The council is committed to improving air quality in the city and expects development to reduce exposure to poor air quality and maximise opportunities to improve it locally without detriment of air quality in other areas.*

AIR QUALITY NEUTRAL AND POSITIVE

- B. Major developments in Opportunity Areas and Housing Renewal Areas and those subject to an Environmental Impact Assessment should achieve Air Quality Positive status.*
- C. All other major developments and developments incorporating solid biomass boilers or Combined Heat and Power (CHP) should at least be Air Quality Neutral.*

AIR QUALITY ASSESSMENTS

- D. Air Quality Assessments will be required for:*

- 1. Major developments;*
- 2. Proposals that include potentially air pollution generating uses or combustion-based technologies;*
- 3. Proposals incorporating sensitive uses; and*
- 4. All residential developments within Air Quality Focus Areas.*

34. Local environmental impacts**CONSTRUCTION IMPACTS**

- F. Developments are required to minimise demolition and construction impact by complying with Westminster's Code of Construction Practice (CoCP).*

G. Modern methods of demolition and construction that minimise negative local environmental impact will be encouraged."

- 2.8.4 A number of policies have been "saved" from WCC Unitary Development Plan (21) which was formerly adopted in January 2007. This includes Policy ENV5 on air pollution, which states that:

"(A) The City Council will encourage new development that does not lead to an increase in local air pollution.

(B) The City Council will promote measures to improve air quality, in particular encouraging developers to minimise global and local air pollution and emission of odours by:

- 1) minimising traffic generated by developments;*
- 2) using natural ventilation systems and lighting wherever possible;*
- 3) using the most energy efficient forms of heating, air conditioning and active ventilation systems;*
- 4) careful design and siting of central heating and ventilation exhausts;*
- 5) avoiding or reducing emissions from the burning of fossil fuels; and*
- 6) following the Westminster Considerate Builders" code of practice to contain dust and fumes on building sites.*

(C) For those developments that require air conditioning systems, the City Council will encourage

use of dry rather than wet systems.

(D) The City Council will monitor air pollutants, including those from motor vehicles, and seek reductions in those pollutants.

(E) When considering applications for development involving the storage or use of hazardous substances, the City Council will seek the advice of the Health and Safety Executive concerning the nature and severity of the risks presented by potential major hazards to people in the surrounding area."

2.9 WCC Code of Construction Practice

- 2.9.1 WCC have produced a Code of Construction Practice (22) which applies to all major development and infrastructure projects in Westminster. It sets out the minimum standards and procedures for managing and minimising the environmental impacts of construction projects and it is expected that developments should meet and aim to exceed these for projects within the City of Westminster.
- 2.9.2 Advice and regulations relating to traffic and transport, and the management of dust and air pollution is set out in this document.

2.10 Environmental Protection UK Planning Guidance

- 2.10.1 Environmental Protection UK (EPUK), together with the Institute of Air Quality Management (IAQM), produced guidance on how air quality impacts should be assessed within the land-use planning and development control process (11). This guidance provides clear criteria to determine when a detailed air quality assessment is required and a methodology for assessing the significance of air quality effects.

2.11 Institute of Air Quality Management: Construction Dust Guidance

- 2.11.1 The IAQM produced guidance to assist in the assessment of air quality impacts from demolition and construction activities (23). This guidance provides a consistent methodology for assessing the risks of dust impacts from demolition and construction activities and for identifying the correct level of mitigation which should be applied to avoid significant air quality effects.

2.12 The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance

2.12.1 The Greater London Authority has published Supplementary Planning Guidance (SPG) (24) which incorporates the IAQM guidance as detailed above on assessing impacts, details mitigation measures specific to London demolition and construction sites, and, includes specific emission standards for non-road mobile machinery (NRMM) from 2015 onwards.

2.13 Sustainable Design and Construction Supplementary Planning Guidance

2.13.1 In 2014 the Greater London Authority published guidance (25) on the implementation of London Plan Policy 5.3 - Sustainable Design and Construction, as well as a range of policies, primarily in Chapters 5 and 7 that deal with matters relating to environmental sustainability.

2.13.2 The Mayor's priorities concerning air quality are outlined below:

- Developers are to design their schemes so that they are at least 'air quality neutral' (Policy 7.14);
- Developments should be designed to minimise the generation of air pollution (Policies 5.3 and 7.14);
- Developments should be designed to minimise and mitigate against increased exposure to poor air quality (Policies 3.2, 5.3 and 7.14);
- Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants (Policy 7.14); and
- Developers and contractors should follow the guidance set out in the emerging The Control of Dust and Emissions during Construction and Demolition SPG when constructing their development (Policies 5.3 and 7.14).

3. METHODOLOGY

3.1 Consultation with WCC

3.1.1 Consultation was sought with WCC during February and March 2019 to agree the methodology and scope of the air quality assessment, taking into account the building design and potential emissions to air that the development could generate.

3.1.2 The assessment methodology set out below was agreed with Claire Parsons, Senior Practitioner - Air Quality at WCC, and all correspondence is provided in Appendix A.

3.1.3 Since the consultation was undertaken, the 633 sq. metre rooftop office outdoor amenity terrace at Level 18 included within the original 2019 scheme has been omitted under the amended scheme. The 972 sq. metre rooftop outdoor amenity terrace at Level 19 has also been replaced with a smaller outdoor amenity terrace, including a covered space, under the amendments. The outdoor amenity terrace at Mezzanine level included within the original 2019 proposals has also been reduced in size from 219 sq. metres to 129 sq. metres (as shown in Drawing 606_07_104, provided at the rear of this document). Finally, a new outdoor amenity terrace of 78 sq. metres has been incorporated into the proposals at Level 01 above the eastern entrance to the building on Kingdom Street. All outdoor amenity terraces will be for use by the office staff.

3.1.4 A Technical Note was provided in response to queries raised in response to the original planning application. The Technical Note is provided in Appendix D, omitting the response regarding combustion plant which is no longer relevant for the proposed development.

Construction Vehicle Emissions

- 3.1.5 As stated in Paragraph 1.1.11, the number of Construction HGVs associated with the construction phase has been estimated to be 30 per day on average, which is above the threshold for a detailed assessment relating to construction vehicle emissions within or adjacent to an AQMA (screening criteria published by EPUK and IAQM (11)). However, construction vehicles are unlikely to use local residential roads in the vicinity of the application site. Therefore, a detailed assessment on construction vehicle emissions is not considered necessary and has not been undertaken.

3.2 Method of Baseline Data Collection

- 3.2.1 Air quality data were collected from various sources including:

- DEFRA background maps (26);
- London Air website (27);
- Local Air Quality Management Reports (28); and
- London Atmospheric Emissions Inventory GIS Layers (29).

3.3 Assessment Methodology

Construction Dust

- 3.3.1 An assessment of the impacts of dust emissions during construction has been undertaken by considering relevant guidance (23), (24) and the availability and applicability of dust control measures.
- 3.3.2 Factors which affect the potential for dust to be created and released from the application site during construction activities and which migrate and deposit on surfaces and potentially cause nuisance and harm to human health include:
- The nature, scale and duration of activities;
 - Dust control measures employed;
 - The local climate and meteorology; and
 - The character and land use of the surrounding area.

Operational Vehicle Emissions

- 3.3.3 As stated in Paragraph 1.1.12 the proposed development will be 'car-free', except for two parking spaces for disabled drivers, which will be provided at Lower Ground Floor Level in the eastern part of the application site. Development traffic is therefore below the screening criteria published by EPUK and IAQM (11) for an assessment of the impact of development traffic to be necessary. The impact of delivery and servicing vehicles on local air quality was assessed in a Technical Note following submission of the original planning application included in Appendix D. This demonstrated that delivery and servicing vehicles would have a negligible impact on local air quality.

Site Suitability Assessment

- 3.3.4 The proposed development introduces short term public exposure locations. A qualitative assessment has been undertaken to assess the likely exposure of air quality impacts on users of the proposed development, taking into account projected baseline maps, the location of these spaces, the design of the building, the energy strategy and the ventilation strategy.

Air Quality Neutral

- 3.3.5 The air quality neutral approach compares the amount of pollutant(s) emitted against a benchmark value, with the aim of minimising the mass of pollutant emitted, rather than targeting the ambient concentration of the pollutant.
- 3.3.6 In accordance with the GLA's Sustainable Design and Construction SPG (25) an Air Quality Neutral Assessment (AQNA) has been undertaken using the latest information about the proposed development. The methodology and emission factors are taken from the Air Quality Neutral Planning Support Document (30).
- 3.3.7 The Gross External Areas (GEAs) were provided to undertake the AQNA.
- 3.3.8 Transport consultants Sweco have undertaken calculations to establish the number of delivery vehicle trips that the proposed development may generate.

4. BASELINE

- 4.0.1 The whole borough of Westminster was declared an Air Quality Management Area (AQMA) for exceedances of the NO₂ and PM₁₀ objectives (short and long term) in 1999.
- 4.0.2 The development site is in an area of poor air quality due to the elevated air pollution within central London and the proximity of the site to a busy trunk road flyover (A40 Westway).
- 4.0.3 Monitoring of air quality in London is the responsibility of the borough councils. In Westminster there are no active air quality monitoring stations in the immediate vicinity of the site, however there is a monitoring location on Marylebone Road approximately 2km to the east, which has monitored NO₂ concentrations well in excess of the national objective over the last few years. PM₁₀ concentrations have been within the national objective over the last few years at this monitoring site. Currently, no NO₂ diffusion tube monitoring is carried out in Westminster.

4.1 Defra Background Mapping

- 4.1.1 Background NO₂ and PM₁₀ concentrations have been obtained from Defra maps of predicted background pollutant concentrations, which have been produced to aid local authorities in carrying out their Review and Assessment duties. The maps include computer modelled predictions of background concentrations of air pollutants over the whole of the UK with a grid resolution of 1km². Background concentrations are those levels that would be observed away from specific sources such as roads and industry. The background concentrations for the site are provided below in Table 4.1 for 2016, 2020 and the proposed development opening year in 2025.

Table 4-1: DEFRA Background Mapping Concentrations

Grid Reference	NO ₂			PM ₁₀		
	2016	2020	2025	2016	2020	2025
525500, 181500	41.0	30.8	25.9	21.3	18.9	18.0

- 4.1.2 Background pollutant concentrations at the site are predicted to improve between 2016 and 2020, and further improve between 2020 and 2025, especially for NO₂ concentrations. The predicted

reduction in background concentrations between 2016 and 2020 is 15.1µg/m³ for NO₂ and 3.3 µg/m³ for PM₁₀.

4.2 Local Authority Monitoring Data

- 4.2.1 The closest monitoring location within WCC is located along Marylebone Road, a kerbside site (Grid Ref 528125, 182016). A roadside site is in the neighbouring borough of Brent (Grid Ref 523721, 183008) named ARK Franklin Primary Academy, an urban background site is located in the neighbouring Borough of Kensington and Chelsea (Grid ref: 524045, 181752) named North Kensington, and a kerbside site is located in the neighbouring borough of Camden (Grid Ref 526629, 184391) named Swiss Cottage.
- 4.2.2 Table 4.2 and Table 4.3 present NO₂ and PM₁₀ monitoring data for these sites obtained using London Air (27), with the monitoring locations displayed in Figure 4.1. Values in bold highlight exceedances of the relevant NAQO.
- 4.2.3 The monitoring data shows a significant improvement in NO₂ concentrations in 2019 compared to earlier years, likely as a result of policies to improve air quality. Whilst 2020 automatic monitoring data is available for the year to date, it is not representative of normal economic circumstances due to the Covid-19 pandemic, and therefore has not been used.
- 4.2.4 The 2019 measured reduction in pollutant concentrations is consistent with the predicted reductions in background concentrations from the Defra background maps. This validates the predicted reduction in pollutant concentrations across the site between 2016 and 2025.

Table 4-2: NO₂ Concentrations Recorded at Local Monitoring Stations

Monitor	Years					
	Type	Authority	2016	2017	2018	2019
Annual mean (µg/m³) (40)						
Marylebone Road	Kerbside	WCC	89	84	85	63
ARK Franklin Primary Academy	Roadside	Brent	Not available	54 (low capture rate)	44	27
North Kensington	Urban Background	Kensington and Chelsea	35	33	28	19
Swiss Cottage	Kerbside	Camden	66	53	54	29
Number of hours exceeding 200 µg/m³ (18 exceedances allowed)						
Marylebone Road	Kerbside	WCC	64	38	48	0
ARK Franklin Primary Academy	Roadside	Brent	Not available	0 (low capture rate)	0	0
North Kensington	Urban Background	Kensington and Chelsea	0	1	0	0
Swiss Cottage	Kerbside	Camden	37	1	2	0

Table 4-3: PM₁₀ Concentrations Recorded at Local Monitoring Stations

Monitor	Years					
	Type	Authority	2016	2017	2018	2019
Annual mean (µg/m³) (40)						
Marylebone Road FMDS	Kerbside	WCC	26	24	24	22
ARK Franklin Primary Academy	Roadside	Brent	Not available	22 (low capture rate)	21 (low capture rate)	20
North Kensington FIDAS	Urban Background	Kensington and Chelsea	N/A	N/A	14	15
Swiss Cottage	Kerbside	Camden	21	N/A	21	17
Number of days exceeding 50 µg/m³ (35 exceedances allowed)						
Marylebone Road FMDS	Kerbside	WCC	14	8	7	10
ARK Franklin Primary Academy	Roadside	Brent	Not available	0 (low capture rate)	3 (low capture rate)	2
North Kensington FIDAS	Urban Background	Kensington and Chelsea	N/A	N/A	1	5
Swiss Cottage	Kerbside	Camden	7	8	4	0

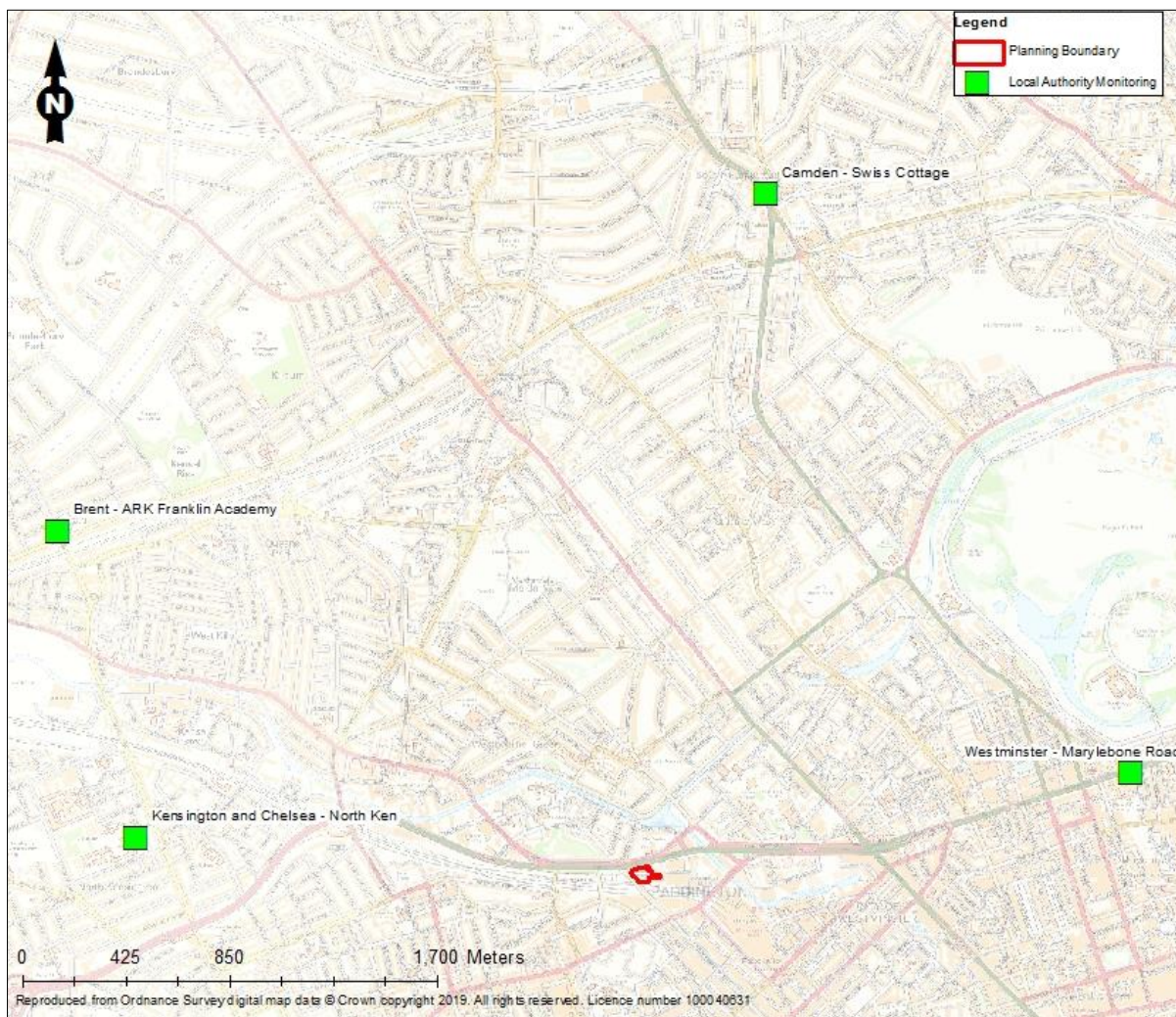


Figure 4.1: Air Quality Monitoring Locations

4.3 London Atmospheric Emissions Inventory GIS Layers

- 4.3.1 Estimates of key pollutants, including NO_2 and PM_{10} are available from the London Atmospheric Emission Inventory (LAEI). Figures 4.2 and 4.3 and present predicted NO_2 and PM_{10} levels for 2016 respectively at the application site.

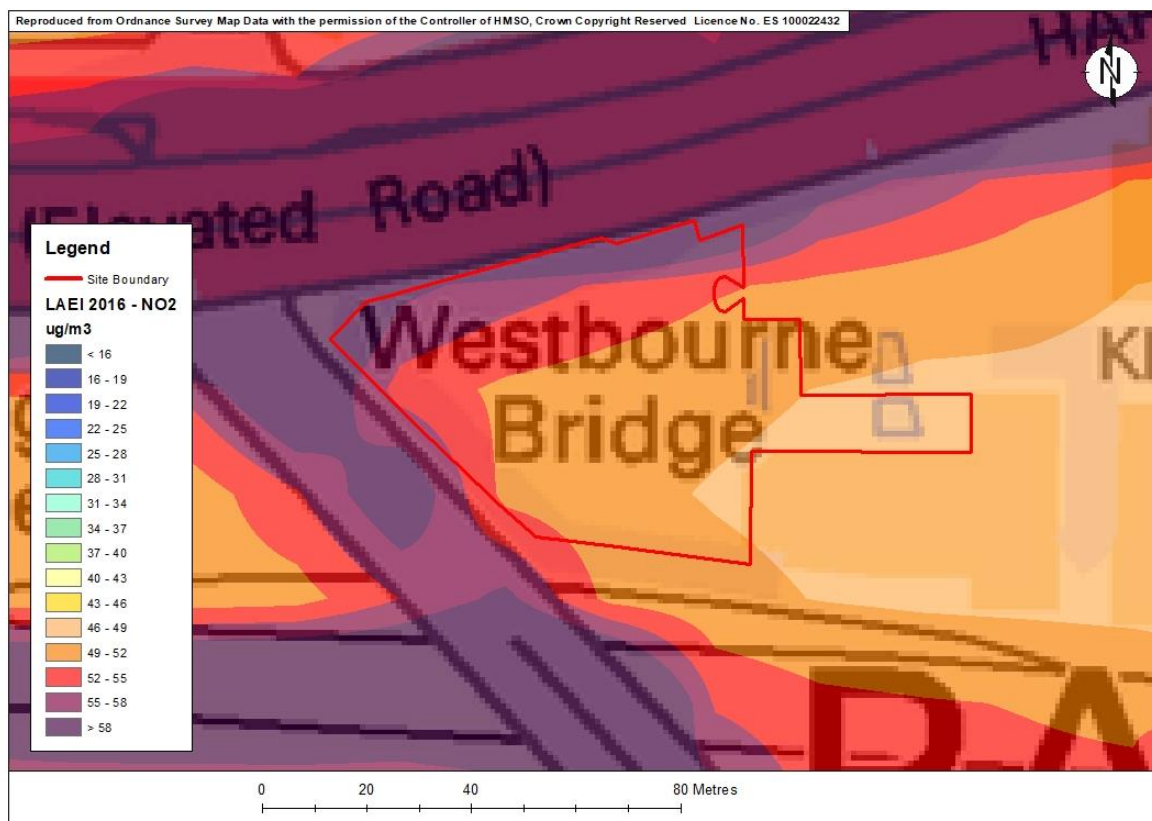


Figure 4.2: London Atmospheric Emission Inventory Map 2016 NO₂ with Kingdom Street Planning Boundary

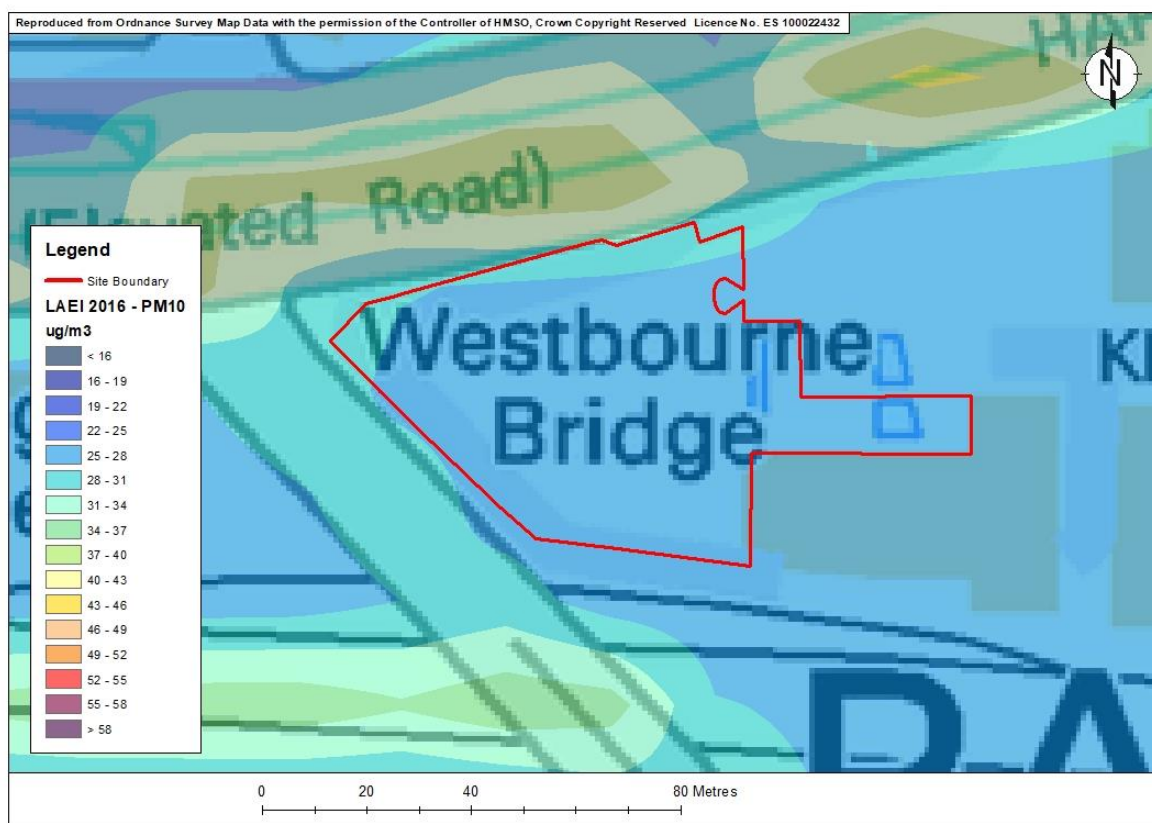


Figure 4.3: London Atmospheric Emission Inventory Map 2016 PM₁₀ with Kingdom Street Planning Boundary

4.4 Baseline Summary

- 4.4.1 The LAEI modelled data for 2016 indicates that small areas of the north west and northern edges of the site would have annual mean NO₂ and PM₁₀ concentrations above 60µg/m³ and 32µg/m³ respectively. These are the thresholds for potential exceedances of the short-term objectives which are relevant for the site.
- 4.4.2 The measured data in the local area, and the Defra background map predictions supports a significant reduction in pollutant concentrations, between 2016 and 2025. By 2025, pollutant concentrations across the whole of the site will be well below the thresholds for potential exceedances of the short-term objectives.

5. ASSESSMENT

5.1 Construction Dust Assessment

- 5.1.1 The construction is programmed to commence in 2021 and be complete for occupation in 2025.
- 5.1.2 The various stages of the assessment, determination of receptor sensitivity and dust emission magnitude criteria are reproduced in Appendix B.
- 5.1.3 Sensitive receptors are in close proximity to the site location. The closest are within 50 m to the north which are residential properties along Westbourne Terrace and within 100 m to the south which are also residential properties along Orsett Terrace and Gloucester Terrace.
- 5.1.4 No nationally or internationally designated ecological site is present within 1 km of the site location.

Step 2A - Define the Potential Dust Emission Magnitude

- 5.1.5 Using the evaluation criteria within Guidance the potential dust emission magnitude has been identified for each activity during the construction phase shown in Table 5.1 below.

Table 5-1: Dust Emission Magnitude for Each Activity

Activity	Dust Emission Magnitude	Justification
Demolition	Large	Total building volume >50,000 m ³
Earthworks	Medium	Total site area 2,500m ² - 10,000 m ²
Construction	Large	Total building volume >100,000 m ³
Trackout	Medium	10-50 HDV (>3.5 t) movements in any one day

Step 2B - Define the Sensitivity of the Area

- 5.1.6 The next stage of the process is to define the sensitivity of the assessment area to dust soiling, human health impacts and ecological receptors. This process combines the sensitivity of the receptor with the distance from the source to determine the overall sensitivity of the area.
- 5.1.7 The sensitivity of receptors and the area in relation to dust impacts is provided in Table 5.2.

Table 5-2: Sensitivity of Receptor and Area to Dust Impacts (taking into account distance to construction activity)

Sensitivity	Receptor	Area
Dust soiling	Medium sensitivity receptors located <20 m; High sensitivity receptors located <50 m	Medium
Human health impacts	Medium receptors are located <20 m; High sensitivity receptors located <50 m; existing PM ₁₀ concentrations estimated to be less than 24 µg/m ³ ;	Low
Ecological receptors	No ecological sites sensitive to dust is within 50 m of the construction area.	Not Sensitive

Step 2C - Define the Risk of Impacts

- 5.1.8 The dust emission magnitude determined in Table 5.1 has been combined with the sensitivity assessment in Table 5.2 to define the risk of impacts for each phase of development in the absence of mitigation as shown in Table 5.3.

Table 5-3: Risk of Dust Impacts in the Absence of Mitigation for Each Construction Activity

Effect	Sensitivity of Area	Risk of Dust Impacts			
		Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium	High	Medium	Medium	Low
Human health	Low	Medium	Low	Low	Low

- 5.1.9 Overall, without mitigation, the risk of dust soiling impacts is likely to be High – Medium and the risk of health effects from PM₁₀ is likely to be Medium - Low. There are no ecological effects.
- 5.1.10 Dust impacts would be greatest in dry weather following long periods without rain and with the wind blowing towards sensitive receptors. Depending on wind speed and turbulence it is likely that the majority of dust will be deposited within 100m of the source.
- 5.1.11 Mitigation measures which are proposed for the level of risk of dust soiling and health effects are provided in Appendix C. By applying these mitigation measures and by adhering to WCC's Code of Construction Practice during the construction phase the effect of construction dust is reduced to negligible.

5.2 Impacts of the Development on the Local Area

- 5.2.1 It is predicted that 105 vehicle trips will be associated with the proposed development in operation (with 10 of these HGVs). The report submitted with the original planning application did not consider that this level of operational traffic would have a significant impact on local air quality based on a qualitative argument regarding the likely routing of the vehicles.
- 5.2.2 Subsequent to the planning application being submitted, and in response to a query raised by WCC, a Technical Note was prepared outlining the results of dispersion modelling of the impact of development traffic. The modelling results are included as Appendix D and it demonstrates that development traffic will have a negligible impact upon local air quality. These conclusions remain valid for the 2020 scheme amendments.

5.3 Site Suitability for the Proposed Development

- 5.3.1 The proposed development is for commercial use and additional flexible uses, including community, cultural and/or leisure uses and therefore public exposure will be limited to short term periods within the Garden, Mezzanine and Level 1 Outdoor Amenity and the Rooftop Outdoor Office Amenity Space.
- 5.3.2 The projected 2025 NO₂ and PM₁₀ levels, at locations where public exposure is expected, are likely to be well within the short-term objectives (under 60µg/m³ for NO₂ and under 32 µg/m³ for PM₁₀).
- 5.3.3 Upper Box to Mezzanine level, as shown on Figure 5.1 below, will be fully glazed utilising mechanical ventilation drawing air from the Upper Box level façade furthest away from the A40 Westway. The remaining higher floors are mechanical ventilated drawing air from the roof. The Garden will be fully enclosed with the option of openable windows.

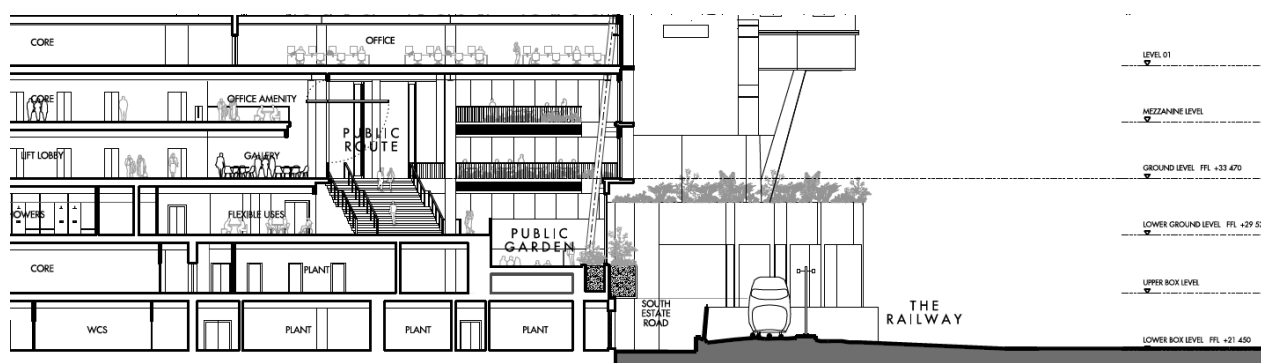


Figure 5.1: Lower Levels Section Drawing

- 5.3.4 Taking into consideration the design of the building as detailed above, and that concentrations of NO₂ and PM₁₀ in 2025 are expected to be within the relevant short-term objective levels at street level, the site is considered suitable for its intended use without the need for any additional mitigation.

5.4 Air Quality Neutral Assessment

- 5.4.1 The Air Quality Neutral (AQN) assessment for Transport compares the road traffic emissions associated with the proposed development, which are based upon land use, the number of anticipated trips per year, and the average distance travelled per trip, against a calculated Transport Emissions Benchmark, which is based upon land use floor areas/number of dwellings of the proposed development and London emission factors associated with Central Activity Zone.
- 5.4.2 The predicted number of vehicle trips per year has been multiplied by the average distance travelled per trip, to obtain the total average distance travelled per year for the proposed development (30).
- 5.4.3 The emission factors taken from the guidance are 0.4224 g/km for NO_x and 0.07533 g/km for PM₁₀. These emission rates are multiplied by the total average distance travelled per year to obtain the transport emissions for each land use and are then added together to obtain quantified Total Transport Emissions in kilogrammes. The calculations are presented below in Tables 5.4 and 5.5.

Table 5-4: Air Quality Neutral Calculations - Transport Emissions Benchmark (TEB)

Land Use Class	Description	GIA (sqm)	Emission Benchmark (kg/annum)	
			NO _x	PM ₁₀
Class A1-A5	Retail / Market Hall	4,439	750	130
Class B1 and Class D2*	Office and Auditorium / study space	57,076	72	13
Total TEB			823	143

* Emission Benchmark derived from B1 Office as no benchmark available for D2, as described in examples within the AQN Guidance

Table 5-5: Air Quality Neutral Calculations - Transport Emissions

Land Use Class	Daily Trips	Trips per Annum	Predicted Development Emission (kg/annum)	
			NO _x	PM ₁₀
Class A1-A5	30	10,950	43	7
Class B1 and Class D2	74	27,010	34	6
Total predicted development transport emission (kg/annum)			77	13
Total TEB (kg/annum)			823	143
Difference between predicted development transport emission and TEB			-745	-192

5.4.4 The above calculations show that the development is well within the calculated benchmarks and is therefore air quality neutral for transport emissions.

5.4.5 As there are no combustion emissions associated with space heating or hot water, the building will be air quality neutral for building emissions.

6. CONCLUSIONS

6.0.1 The construction dust assessment has concluded that there is a High-Medium risk of dust soiling and Medium - Low risk of health effects without mitigation. By applying the mitigation measures presented in Appendix C the effect of construction dust is not significant.

6.0.2 No significant impacts are predicted regarding vehicle emissions.

6.0.3 Taking into account the design proposals for the building, it is considered that the site is suitable for its proposed use without the need for additional mitigation.

6.0.4 The Air Quality Neutral Assessment has concluded that for both buildings and transport emissions, the proposed development is air quality neutral.

REFERENCES

1. **European Commission.** Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. European Commission. s.l. : European Commission, 2008.
2. **UK Government.** Air Quality (England) Regulations 2010 . *Statutory Instrument 2010 No 1001*. s.l. : UK Government, 2010.
3. **DEFRA.** UK Plan for tackling roadside nitrogen dioxide concentrations An overview. s.l. : DEFRA, 2017.
4. —. UK Plan for tackling roadside nitrogen dioxide concentrations Detailed plan. . s.l. : DEFRA, 2017.
5. **UK Government.** Part IV The Environment Act 1995. s.l. : UK Government, 1995.
6. —. Air Quality (England) Regulations 2000. *Statutory Instrument 2000 No 928*. s.l. : UK Government, 2000.
7. —. Air Quality (England) (Amendment) Regulations 2002. *Statutory Instrument 2002 No 3043*. s.l. : UK Government, 2002.
8. **Organisation, World Health.** *Air Quality Guidelines: Global Update 2005*. 2005.
9. **Marnier, D Laxen and B.** Analysis of the relationship between one-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites. July 2003.
10. **A, Cook.** Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedances of the one-hour mean. May 2008.
11. **Environmental Protection UK and Institute of Air Quality Managment.** Land-Use Planning and Development Control: Planning for Air Quality. s.l. : Institute of Air Quality Managment, 2017.
12. **DEFRA.** Clean Air Strategy 2019. s.l. : DEFRA, 2019.
13. **Ministry of Housing, Communities and Local Government.** National Planning Policy Framework. [Online] February 2019.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf.
14. **Greater London Authority.** *The London Plan: The Spatial Development Strategy for London Consolidated with Alterations Since 2011*. 2016.
15. —. *The London PLn. The Spatial Development Strategy for Greater London. Draft for public consultation*. 2017.
16. —. *Draft New London Plan (Mayor's Intending to Publish version)*. 2019.
17. —. *London Environment Strategy*. 2018.
18. **City of Westminster.** Air Quality Action Plan 2013-2018. s.l. : City of Westminster, April 2013.
19. **Westminster City Council.** Westminster City Plan. s.l. : Westminster City Council, 2016.
20. —. City Plan 2019-2040. s.l. : Westminster City Council, 2018.
21. —. Unitary Development Plan. s.l. : Westminster City Council, 2007.
22. —. Code of Construction Practice. *Westminster City Council*. [Online] July 2016.
https://www.westminster.gov.uk/sites/default/files/code_of_construction_practice_2016_v1.1_4.pdf.
23. **Institute of Air Quality Managment.** Guidance on the assessment of dust from demolition and construction Version 1.1. s.l. : Institute of Air Quality Managment, 2016.
24. **Greater London Authority.** The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance. s.l. : Greater London Authority, 2014.
25. —. Sustainable Design and Constuction Supplementary Planning Guidance. s.l. : Greater London Authority, 2014.
26. **DEFRA.** UK Air - Air Information Resource. [Online] <http://uk-air.defra.gov.uk/data/laqm-background-home>.
27. **London, Kings College.** Londonair. [Online]
<http://www.londonair.org.uk/LondonAir/Default.aspx> .

28. **Westminster City Council.** Air Quality Annual Status Report for 2017. s.l. : Westminster City Council, May 2018.
29. **Greater London Authority.** London Atmospheric Emissions Inventory (LAEI) 2013. [Online] <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>.
30. **Air Quality Consultants; Environ.** Air Quality Neutral Planning Support Update: GLA 80371. s.l. : Air Quality Consultants, 2014.
31. **Greater London Authority .** London Environment Strategy. s.l. : Greater London Authority , May 2018.
32. **Mayor of London.** Clearing the Air: The Mayor's Air Quality Strategy. s.l. : Greater London Authority, 2010.
33. —. The London Plan: The Spatial Development Strategy for London Consolidated with Alternations since 2011. s.l. : Greater London Authority, March 2016.
34. —. The Draft New London Plan showing Minor Suggested Changes . [Online] 2018. https://www.london.gov.uk/sites/default/files/draft_london_plan_-_showing_minor_suggested_changes_july_2018.pdf.

APPENDIX A CORRESPONDENCE WITH WCC

Victoria Gouge

From: Victoria Gouge
Sent: 22 March 2019 13:42
To: Parsons, Claire: WCC
Subject: RE: 5 Kingdom Street - Air Quality
Attachments: 5 Kingdom Street - LAEI_NO2_Garden.pdf; 5 Kingdom Street - LAEI_NO2_Rooftop.pdf

Hello Claire,

Thanks for responding.

Monitoring would be beneficial when undertaking a dispersion modelling exercise in order to verify the model with local traffic data and then predicting pollutant concentrations at varying heights where public exposure is introduced in the future. Otherwise, monitoring can only provide information on current pollution levels and unless undertaken over a full annual period, there is considerable uncertainty in the data. Due to the design (mechanically ventilated throughout) and land use (office and commercial use with public areas) of the proposed building, we have proposed that a qualitative assessment for site suitability is sufficient and you have agreed to this in your email (14th February) where you have stated: *The air quality assessment should have regard to 1 hour exposure levels for Nitrogen Dioxide for staff and customers of the proposed building, particularly if outdoor seating area is proposed.* No ground floor outdoor seating is proposed and our qualitative assessment shall consider the short term objective level for NO₂ – as stated in Ramboll's email (12th February) detailing the scope, namely The Garden (street level) and Rooftop Outdoor Office Amenity Space (100m above ground).

I have provided plans detailing the London Atmospheric Emissions Inventory 2020 projections of NO₂ (at ground level), and it can be seen that at both locations where the short term objective would apply, the projected concentrations are well below 60µg/m³. Given that The Garden is fully enclosed (with the option of openable windows) and the Rooftop Outdoor Office Amenity Space is 100m above ground and therefore due to pollutant dispersion with height pollutants are likely to be reduced further, and that the opening year of the development is 2024 and NO₂ concentrations will be reduced further from these projections, Ramboll consider that the short term objective (1 hour exposure levels for NO₂) is very unlikely to be exceeded once the development is built and operational.

Kind regards
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From: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Sent: 18 March 2019 14:47
To: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Hi Victoria

Apologies for the delay, I consider you will need to explain why the diffusion tube data won't be necessary because of the relationship of the height of the tubes relative to the development proposals as I am unclear how this would differ from the use of continuous monitoring data. It looks as though you are trying to explain that the diffusion tubes are not applicable because the data won't be representative although perhaps I have misunderstood?

Happy to discuss.

Kind regards
Claire

From: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Sent: 13 March 2019 11:36
To: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Hello Claire,

Would you be able to confirm that my explanation below is acceptable? Obviously more detail will be provided within the Air Quality Assessment once submitted.

Kind regards
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From: Victoria Gouge
Sent: 26 February 2019 09:34
To: 'Parsons, Claire: WCC' <cparsons@westminster.gov.uk>
Cc: Gordon O'Connor-Read <Gordon.OConnorRead@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Hello Claire,

The roof terrace is 100m above ground and therefore is unlikely to have the same conditions as ground floor and the Winter Garden on level one will be fully enclosed by the building utilizing mechanical ventilation with the option of openable windows or to keep them sealed if need be. No outdoor seating is proposed.

Kind regards
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From: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Sent: 25 February 2019 17:15
To: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Cc: Gordon O'Connor-Read <Gordon.OConnorRead@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Hi Victoria

My only comment about the below statement is that I am not sure why the ground floor outside conditions would not be representative of winter gardens or the roof terrace in this instance, given that this would normally be the case for all diffusion tube monitoring surveys and also the continuous monitoring stations?

Kind regards
Claire

From: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Sent: 21 February 2019 15:40
To: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Cc: Gordon O'Connor-Read <Gordon.OConnorRead@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Thank you for speaking with me Claire,

My understanding of our conversation was that the diffusion tube monitoring onsite is only a recommendation and that should we be able to demonstrate why onsite monitoring has not been undertaken, with reasonable justification, such as that the ground floor outside conditions would not be representative of the conditions within the winter gardens or roof terrace, then monitoring is not necessary in this instance.

I would be grateful if you could confirm you are in agreement with the above?

Kind regards
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From: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Sent: 21 February 2019 14:58
To: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

No problem, yes that's my number.

From: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Sent: 21 February 2019 14:28
To: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Thank you.

Is this your number?

020 7641 3119

Kind regards
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From: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Sent: 21 February 2019 14:18

To: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Hi Victoria,

I should be free around 3 ish if you'd like to call then?

Thanks,
Claire

From: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Sent: 21 February 2019 13:50
To: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Thank you Claire,

Would you be able to speak later today to clarify one aspect at all?

Kind regards
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From: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Sent: 14 February 2019 17:31
To: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Subject: RE: 5 Kingdom Street - Air Quality

Dear Victoria

Thank you for your e-mail. I have provided comments in blue type below. Please let me know if you have any queries.

Kind regards
Claire

From: Victoria Gouge <victoria.gouge@ramboll.co.uk>
Sent: 12 February 2019 12:24
To: Parsons, Claire: WCC <cparsons@westminster.gov.uk>
Subject: 5 Kingdom Street - Air Quality

Dear Ms Parsons,

I write in connection with the proposed mixed use development located at 5 Kingdom Street, Paddington, following on from the Scoping Report (18/41232/EEMAJ) submitted in November 2018.
I would like to gain your views on the proposed scope and methodology of the Air Quality Assessment to support the Planning Submission. The site location is attached.

As stated in the Scoping Report the development proposals comprise of " *the erection of a building of ground (Kingdom Street level) plus a mezzanine and 19 storeys, roof terrace/double height plant space, with three levels below Kingdom Street for mixed use (A1, A2, A3, A4, B1, D1 and D2). At levels B2 and B3, the development*

footprint extends eastwards under the 4 Kingdom Street and 1 Kingdom Street buildings." No car parking or residential element is proposed.

The proposed scope is as follows:

- Existing air quality at the application site and in the surrounding area;
- Dust and other emissions during construction which could lead to nuisance and a deterioration in local air quality; and
- The suitability of the site for its intended use.

Therefore, the Air Quality Assessment will include:
Review of baseline air quality

I recommend regard is given to the diffusion tube monitoring programme and continuous monitoring data (where applicable) of the neighbouring boroughs of Brent and Kensington & Chelsea, WCC's air quality action plan and planning policy with respect to air quality; I recommend a diffusion tube survey is carried out.

- Identification of any existing sources of emissions in the vicinity of the site;
- Undertake an assessment of construction dust following the IAQM and GLA guidance; Recommend refer to Westminster City Council COCP - <https://www.westminster.gov.uk/code-construction-practice>
- Screen the need for a detailed assessment of development traffic and combustion plant using EPUK / IAQM criteria;
- Undertake a qualitative assessment of site suitability; The air quality assessment should have regard to 1 hour exposure levels for Nitrogen Dioxide for staff and customers of the proposed building, particularly if outdoor seating area is proposed.
- Undertake an Air Quality Neutral Assessment; and
- Summarise the above in a short report for planning
- Identify any necessary mitigation measures

The proposed development does not provide any car park spaces and only one loading bay for delivery vehicles. The IAQM/EPUK planning guidance provides criteria on when a detailed assessment is required. The Stage 1 criteria is as follows:

A. If any of the following apply:

- i. 10 or more residential units or a site area of more than 0.5ha;
- ii. more than 1,000 m² of floor space for all other uses or a site area greater than 1ha.

B. Coupled with any of the following:

- i. the development has more than 10 parking spaces;
- ii. the development will have a centralised energy facility or other centralised combustion process

If none of the criteria are met then 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.

- 1.0.1 The proposed development does exceed the stage A criteria: site area of more than 0.5ha / more than 1,000 m² of floor space for all other uses / a site area greater than 1ha. However, the proposed development does not meet the stage B criteria (no car park spaces and the energy strategy is for a majority use of Air Source Heat Pumps (80%)) and therefore an air quality assessment for the impact of the proposed development on the local area is considered not required, and it can be concluded that any air quality impacts would be insignificant. **Ok**

The proposed development does introduce short term public exposure locations. A qualitative assessment will be undertaken to assess the likely exposure of air quality impacts on users of the proposed development, taking into account the design of the building, the energy strategy and the ventilation strategy. **OK**

Regarding your comment within the Scoping Response "I recommend consideration be given to the development achieving 'Air Quality Positive approach' in line with the GLA London Plan with minor suggested changes, policy SI1. A 3", The London Environment Strategy (May 2018) states that "The Mayor will provide guidance for developers on the most effective approach to take to ensure a development is Air Quality Positive and will review and update the guidance as required. This will ensure the best approaches to Air Quality Positive development are used in London."

However, no such guidance is currently available and therefore an assessment on demonstrating that the proposed development is Air Quality Positive is not possible at this time. I will speak to the GLA about this and get back to you

I welcome any further comments on the above to ensure the Air Quality Assessment is satisfactory for the Planning Submission.

Kind regards
Victoria Gouge

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APPENDIX B

DUST ASSESSMENT METHODOLOGY

Institute of Air Quality Management Guidance on the assessment of dust from demolition and construction Version 1.1 (2016)

The IAQM Dust Guidance's Step 1 is to apply the following screening criteria:

An assessment will normally be required where there is:

- a 'human receptor' 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).
- an 'ecological receptor' 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).

If the neither criteria applies it can be concluded that the level of risk is "negligible" and any effects will not be significant.

If it is determined that an assessment is required, the following steps are carried out to determine the site's risk of causing dust impacts.

The risk of dust arising to cause annoyance and/or health and/or ecological impacts is determined based on the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). these two factors are combined in Step 2C to determine the risk of dust impacts prior to the application of mitigation measures.

Step 2A - Define the Potential Dust Emission Magnitude

The Dust Emission Magnitude is determined based on the scale of the anticipated works for four activities: demolition, earthworks, construction and trackout. The Dust Emission Magnitude is classified as Large, Medium or Small depending on the criteria set out below in Table 1.

Table 1: Dust Emission Magnitude

Large	Medium	Small
<p>Demolition</p> <ul style="list-style-type: none"> total building volume >50,000 m³ potentially dusty construction material (e.g. concrete) on-site crushing and screening demolition activities >20 m above ground level 	<ul style="list-style-type: none"> total building volume 20,000m³ – 50,000m³ potentially dusty construction demolition activities 10-20m above ground level 	<ul style="list-style-type: none"> total building volume <20,000m³ construction material with low potential for dust release(e.g. metal cladding or timber) demolition activities <10m above ground during wetter months
<p>Earthworks</p> <ul style="list-style-type: none"> total site area >10,000m² potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) 	<ul style="list-style-type: none"> total site area 2,500m² - 10,000m² moderately dusty soil type(e.g. silt) 5-10 heavy earth moving vehicles active at any one time 	<ul style="list-style-type: none"> total site area <2,500m² soil type with large grain size (e.g. sand) <5 heavy earth moving vehicles active at any one time

<p>Large</p> <ul style="list-style-type: none"> • >10 heavy earth moving vehicles active at any one time • formation of bunds >8m in height • total material moved >100,000 tonnes 	<p>Medium</p> <ul style="list-style-type: none"> • formation of bunds 4m - 8m in height • total material moved 20,000 - 100,000 tonnes 	<p>Small</p> <ul style="list-style-type: none"> • formation of bunds <4m in height • total material moved <20,000 tonnes • earthworks during wetter months
<p>Construction</p> <ul style="list-style-type: none"> • total building volume >100,000m³ • piling • on-site concrete batching • sandblasting 	<ul style="list-style-type: none"> • total building volume 25,000m³ - 100,000m³ • potentially dusty construction material (e.g. concrete) • piling • on-site concrete batching 	<ul style="list-style-type: none"> • total building volume <25,000 m³ • construction material with low potential for dust release (e.g. metal cladding or timber)
<p>Trackout</p> <ul style="list-style-type: none"> • >50 HDV (>3.5t) movements in any one day • potentially dusty surface material (e.g. high clay content) • unpaved road length >100m 	<ul style="list-style-type: none"> • 10-50 HDV (>3.5t) movements in any one day • moderately dusty surface material (e.g. high clay content) • unpaved road length 50m – 100m 	<ul style="list-style-type: none"> • <10 HDV (>3.5t) movements in any one day • surface material with low potential for dust release • unpaved road length <50m

Step 2B - Define the Sensitivity of the Area

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

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM₁₀, the local background concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust

Receptor sensitivity is determined from considering the IAQM Criteria detailed in Table 2.

Table 2: Determining Receptor Sensitivity

High	Medium	Low
Sensitivities of People to Dust Soiling Effects		
<ul style="list-style-type: none"> • users can reasonably expect a enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected a to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms. 	<ul style="list-style-type: none"> • users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or • the appearance, aesthetics or value of their property could be diminished by soiling; or • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Indicative examples include parks and places of work. 	<ul style="list-style-type: none"> • the enjoyment of amenity would not reasonably be expected; or • property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or • 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. • indicative examples include playing fields, farmland

High	Medium	Low
<p>(Unless commercially-sensitive horticultural), footpaths, short term car parks and roads.</p>		
<p>Sensitivities of People to the Health Effects of PM₁₀</p>		
<ul style="list-style-type: none"> • locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (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). • 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. 	<ul style="list-style-type: none"> • locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM₁₀ (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). • Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation. 	<ul style="list-style-type: none"> • Locations where human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.
<p>Sensitivities of Receptors to Ecological Effects</p>		
<ul style="list-style-type: none"> • locations with an international or national designation and the designated features may be affected by dust soiling; or • 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. • Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings. 	<ul style="list-style-type: none"> • locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features. 	<ul style="list-style-type: none"> • Locations with a local designation where the features may be affected by dust deposition. • Indicative example is a local Nature Reserve with dust sensitive features.

Exact counting of the number of 'human receptors', is not required. Instead it is recommended that judgement is used to determine the approximate number of receptors (a residential unit is one receptor) within each distance band (>1; 1-10, >100).

For each category the distance to the source is taken into account to determine the sensitivity of the area.

The sensitivity of the area is determined by applying the following risk matrices (Table 3, Table 4 and Table 5).

Table 3: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m) ^c			
		<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

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B, Box 6** and **Box 9**.

^b Estimate the total number of receptors within the stated distance. Only the *highest level* of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors < 20m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors < 50 m is 102. The sensitivity of the area in this case would be high.

^c For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50m from the edge of the road.

Table 4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ concentration ^c	Number of Receptors ^d	Distance from the Source (m) ^e				
			<20	<50	<100	<200	<350
High	>32 µg/m ³ (>18 µg/m ³ in Scotland)	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³ (16-18 µg/m ³ in Scotland)	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³ (14-16 µg/m ³ in Scotland)	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³ (<14 µg/m ³ in Scotland)	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³ (>18 µg/m ³ in Scotland)	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³ (16-18 µg/m ³ in Scotland)	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³ (14-16 µg/m ³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³ (<14 µg/m ³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B, Box 7** and **Box 9**.

^b Estimate the total within the stated distance (e.g. the total within 350 m and not the number between 200 and 350 m), noting that only the **highest level** of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 m is 102. If the annual mean PM₁₀ concentration is 29 µg/m³, the sensitivity of the area would be high.

^c Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32 µg/m³ being the annual mean concentration at which an exceedence of the 24-hour objective is likely in England, Wales and Northern Ireland. In Scotland there is an annual mean objective of 18 µg/m³.

^d In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.

^e For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Table 5: Sensitivity of the Area to Ecological Impacts

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

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout and for each designated site. See **STEP 2B, Box 8** and **Box 9**.

^b Only the highest level of area sensitivity from the table needs to be considered.

^c For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site.

Step 2C - Define the Risk of Impacts

The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area in Step 2B to determine the risk of impacts with no mitigation applied using the matrices below (Table 6, Table 7, Table 8 and Table 9).

Table 6: Risk of Dust Impacts - Demolition

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

Table 7: Risk of Dust Impacts - Earthworks

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

Table 8: Risk of Dust Impacts - Construction

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

Table 9: Risk of Dust Impacts - Trackout

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

The dust risk categories for all the four activities determines the appropriate site-specific mitigation measures to be applied.

APPENDIX C

DUST MITIGATION MEASURES

THE CONTROL OF DUST AND EMISSIONS DURING CONSTRUCTION AND DEMOLITION SPG

APPENDIX 7 AIR QUALITY CONTROL

XX Highly Recommended X Desirable

MEASURES RELEVANT FOR DEMOLITION, EARTHWORKS, CONSTRUCTION AND TRACK- OUT

MITIGATION MEASURE	MEDIUM RISK	HIGH RISK
Site management		
Develop and implement a stakeholder communication plan that includes community engagement before work commences on site.	XX	XX
Develop a Dust Management Plan.	XX	XX
Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.	XX	XX
Display the head or regional office contact information.	XX	XX
Record and respond to all dust and air quality pollutant emissions complaints.	XX	XX
Make a complaints log available to the local authority when asked.	XX	XX
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 when asked.	XX	XX
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.	XX	XX
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.	XX	XX
Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.		XX
Preparing and maintaining the site		
Plan site layout: machinery and dust causing activities should be located away from receptors.	XX	XX
Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.	XX	XX
Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	XX	XX
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution.	X	X
Avoid site runoff of water or mud.	XX	XX
Keep site fencing, barriers and scaffolding clean using wet methods.	XX	XX
Remove materials from site as soon as possible.	XX	XX
Cover, seed or fence stockpiles to prevent wind whipping.	XX	XX
Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.	X	XX

Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.		X
Agree monitoring locations with the Local Authority.	XX	XX
Where possible, commence baseline monitoring at least three months before phase begins.	XX	XX
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.	XX	XX
Operating vehicle/machinery and sustainable travel		
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.	XX	XX
Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.	XX	XX
Ensure all vehicles switch off engines when stationary – no idling vehicles.	XX	XX
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.	XX	XX
Impose and signpost a maximum-speed-limit of 10mph 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, where appropriate).	X	XX
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	XX	XX
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	XX	XX
Operations		
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.	XX	XX
Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).	XX	XX
Use enclosed chutes, conveyors and covered skips.	XX	XX
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	XX	XX
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.	XX	XX
Waste management		
Reuse and recycle waste to reduce dust from waste materials.	XX	XX
Avoid bonfires and burning of waste materials.	XX	XX
MEASURES SPECIFIC TO DEMOLITION		
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	X	XX
Ensure water suppression is used during demolition operations.	XX	XX
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	XX	XX
Bag and remove any biological debris or damp down such material before demolition.	XX	XX
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.	X	XX

Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil.	X	XX
Only remove secure covers in small areas during work and not all at once.	X	XX
MEASURES SPECIFIC TO CONSTRUCTION		
Avoid scabbling (roughening of concrete surfaces) if possible	X	XX
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.	X X	XX
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.	X	XX
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	X	X
Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.	XX	XX
Avoid dry sweeping of large areas.	XX	XX
Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.	XX	XX
Record all inspections of haul routes and any subsequent action in a site log book.	XX	XX
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned.	XX	XX
Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;	XX	XX
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	XX	XX
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.	XX	XX
Access gates to be located at least 10m from receptors where possible.	XX	XX
Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.	X	XX

APPENDIX D

POST APPLICATION TECHNICAL NOTE

TECHNICAL NOTE

Project name **5 Kingdom Street**
 Project no. **1620001486**
 Client **M3**
 Memo no. **1620001486/AQ/001**
 Version **-**
 To **City of Westminster Council**
 From **Ramboll**
 Copy to **M3; CBRE**

Prepared by **Victoria Gouge**
 Checked by **Lesley Vining**
 Approved by **Lesley Vining**

**Ramboll Response to City of Westminster regarding 5 Kingdom Street
 Proposed Development (Ref: 19_03673) Air Quality Assessment dated
 April 2019**

Date 13/08/2019

***Italics* – City of Westminster comment**
Blue – Ramboll Response to City of Westminster

1 Impacts to Existing Environment

1.1 Development Boilers

No longer relevant.

1.2 Development Vehicle Impacts

Section 3.3.3 of the air quality assessment has stated that the development is car free and has advised that development traffic is below the Stage 1 screening criteria. Service and delivers have been reporting to exceed this criterion a thought as traffic is not predicted to be travelling down along roads impacts have not been assessed. Sensitive receptors are located along "non-residential roads" for example within 30m from the Westway potentially a preferred route, therefore impacts from the predicted additional traffic to sensitive receptors associated with the development should be assessed.

Dispersion modelling has been completed using published Department of Transport traffic flows for the Westway to assess any potential impact to residential properties within close proximity to the Westway, due to the development. This is appended to this Technical Memo and concludes that residential properties within close proximity to the Westway would experience a negligible change of $0.01\mu\text{g}/\text{m}^3$ which is not considered significant.

1.3 Backup Generators

Backup generators are required though no assessment of any potential impacts have been discussed in the report. Where generators are proposed qualitative assessments should be made and should any screening criteria be exceeded a quantitative assessment will be required.

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Any assessment methodology should be confirmed with the local authority prior to modelling.

Standby generators are proposed for landlord life safety and essential supplies. This is a life safety generator (sprinklers, fire alarm, wet risers, firefighting lifts, etc..) however it will also be used to back up landlord services in case of power outage like lighting, lifts, data etc. Details for these generators are currently not fixed, however, as the flues terminate at roof level and are to be used sporadically for testing and in times of power outage, it is unlikely that they will significantly affect the sensitive users at the Rooftop Outdoor Amenity Space or any other relevant location.

2 Chimney Height Calculation

No longer relevant.

3 Site Suitability

The assessment has only assessed the short-term average (1hour mean) for pollutants (NO₂) for the site suitability assessment. The application description includes D1 use type therefore has the potential to introduce a school/nursery etc into the development.

Box 1.1 of Local Air Quality Management Technical Guidance 16 issued by Defra sets out the locations where the various air quality objectives are applicable, and the annual mean objective is relevant for some D1 use types.

Figure 5.3.2 of the applicant's air quality assessment has provided data from the GLA's local atmospheric inventory to indicate façade concentrations for 2020, suggesting an exceedance of the annual mean objective of NO₂.

I understand that the building is to be mechanically ventilated but if the ventilation inlets are drawing air from an area of poor air quality the future occupiers could be impacted.

The proposed D1 use is for an education and community space. This comprises 100 sq. metres of floorspace for use as a meeting hub for the local community, as well as for the delivery of skills workshops, talks and seminars. No School or Creche uses are proposed. Community and school groups may potentially use the site, however, only for short term durations and therefore the short-term average is applicable.

5 KINGDOM STREET - TRAFFIC VEHICLE DISPERSION MODELLING

Model Verification

The verification process has been undertaken in line with Defra's Technical Guidance document (LAQM-TG/16). Data from a nearby local monitoring site (owned by the local authority) was used in the model verification process. The site utilised in the process was 'Marylebone Road' located nearly 2km to the east of the development site, as shown in Figure 1.

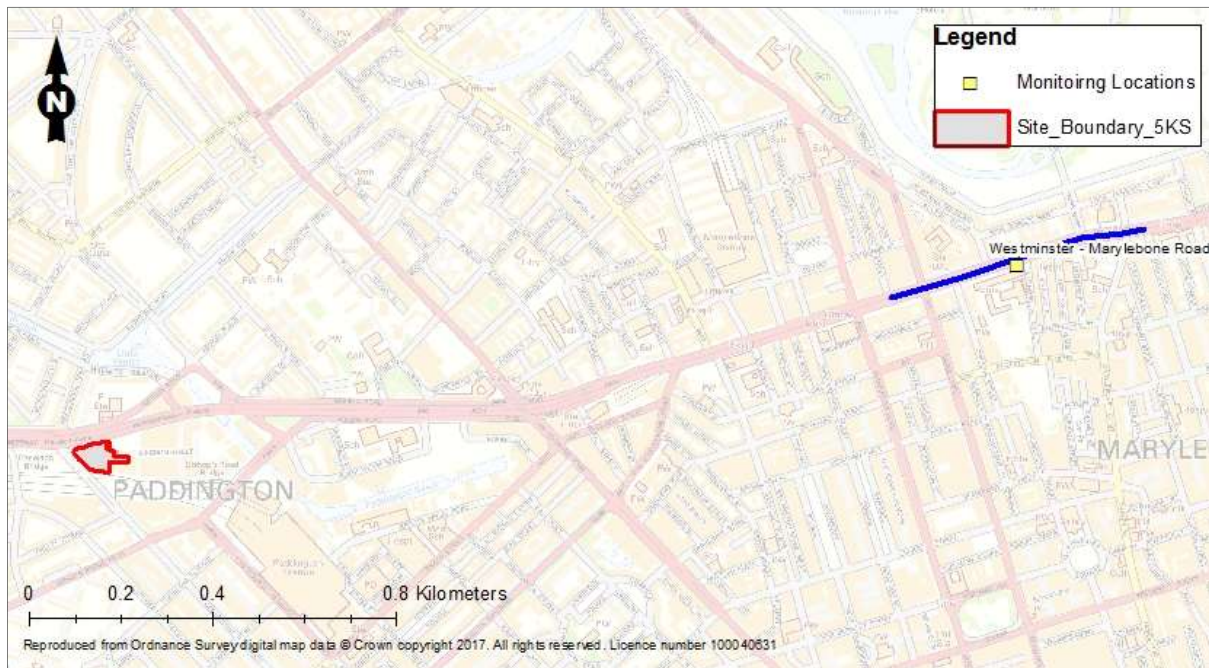


Figure 1

Background data from Defra's predicted background maps was used to provide background NO_x and NO_2 concentrations.

The monitored roadside NO_x was derived by using the diffusion tube tab of the NO_x to NO_2 calculator. The modelled and monitored roadside NO_x contribution values were compared and a factor was obtained.

The modelled roadside NO_x contribution value was adjusted by the overall average factor. The adjusted modelled roadside NO_x contribution value was then converted to roadside NO_2 by using the NO_x to NO_2 Calculator. The Verification factor was calculated to be **2.9**.

The modelling utilised 2018 baseline traffic data published by the Department of Transport and 2018 Met Data from London Heathrow.

Monitor	Modelled Roadside NO _x µg/m ³	Modelled Total NO ₂ µg/m ³	Monitored NO ₂ µg/m ³	% Difference Modelled to Monitored NO ₂	Total NO ₂ after adjustment µg/m ³	% Difference in NO ₂ after adjustment
Marylebone Rd	40.8	57.4	85.0	-32.5	84.1	-1.0

Monitoring Data and Defra Predicted Background Maps

Monitoring Site	Grid Reference	2018 NO ₂ (µg/m ³)
Marylebone Road	528125, 182016	85

Location	Defra Mapped Background Square	2018 NO ₂ (µg/m ³)	2018 NO _x (µg/m ³)	2018 PM ₁₀ (µg/m ³)	2018 PM _{2.5} (µg/m ³)
Marylebone Road Monitoring Site	528500, 181500	40.3	75.5	20.1	13.5
5 Kingdom Street	525500, 181500	35.5	62.8	19.6	12.9

Dispersion Modelling Inputs and Results

Two residential locations north of the Westway was chosen as model receptors. Westbourne Terrace Road 1 (526066, 181667) and Westbourne Terrace Road 2 (526027, 181665), displayed in Figure 2 below, were modelled at a height of 1.5m. These are considered to be the receptor locations that would be most impacted from traffic associated with the proposed development.

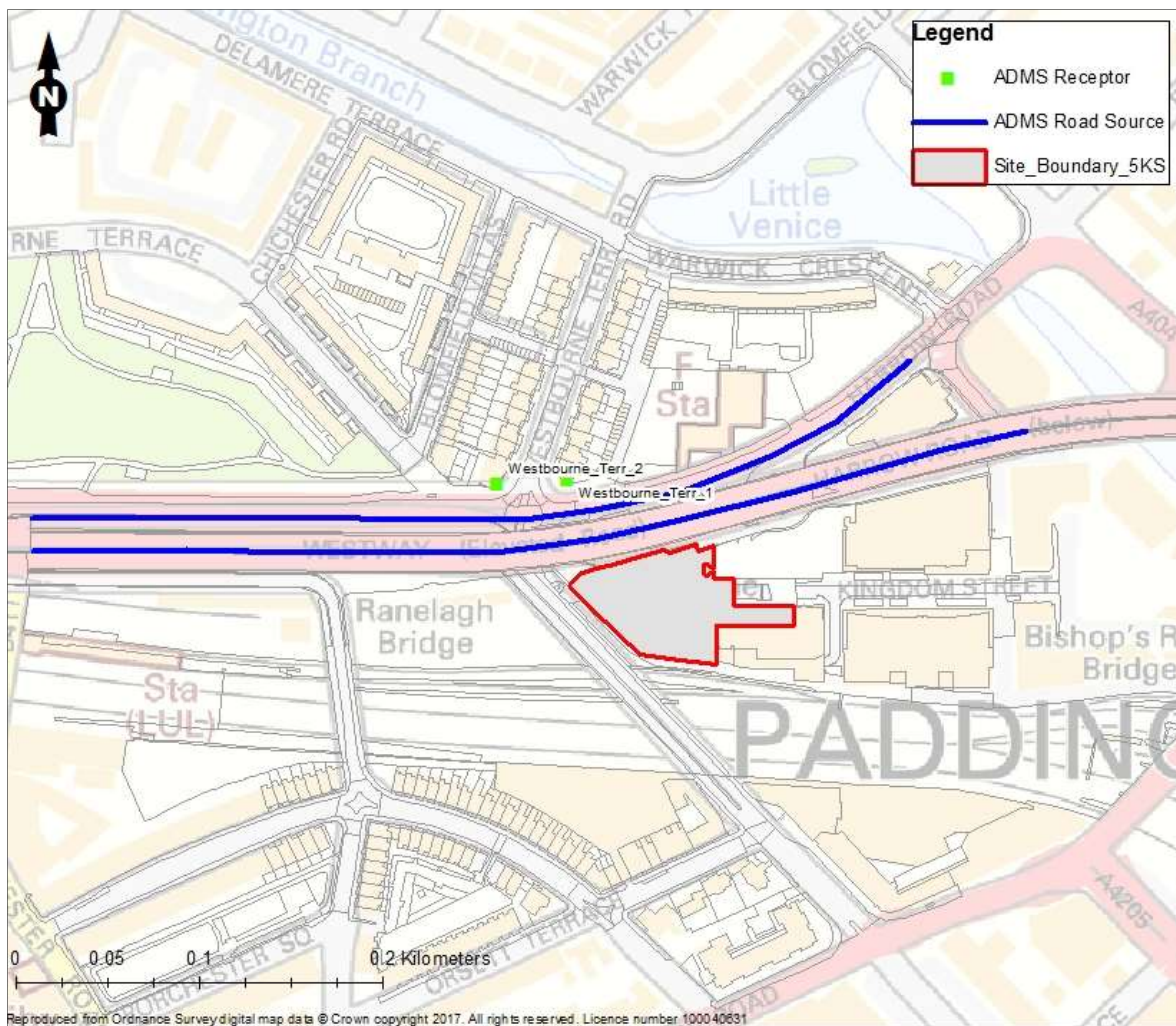


Figure 2

To provide a worst-case assessment the roads were model at 0m, when in reality, the Westway is raised as shown below.



Traffic data used in the verification and modelling is provided below.

Scenario	Road	Source	AADT Total	HGV %
2018 Baseline for Model Verification	Marylebone Road adjacent to Marylebone Monitoring Site	DfT CP 18454	72,366	3%
2024 Baseline for Assessment	Harrow Road West of Westbourne Terrace Road	LAEI 2025	11,189	11%
2024 Baseline for Assessment	Harrow Road East of Westbourne Terrace Road	LAEI 2025	11,019	10%
2024 Baseline for Assessment	Westway adjacent to Development Site	DfT CP 58173	54,985*	2%
2024 Baseline + Development for Assessment	Westway adjacent to Development Site	DfT CP 58173	55,095**	2%

*DfT data factored by Sweco include growth factor to 2024. **Development vehicles of 110 AADT additional to baseline.

No development vehicles are expected to use Harrow Road.

		Modelling Receptor Results	
		Westbourne Terrace Road 1	Westbourne Terrace Road 2
Total NO ₂ (µg/m ³)	No Development	52.66	52.08
	With 5 Kingdom Street	52.67	52.09
	Change	0.01	0.01
Total PM ₁₀ (µg/m ³)	No Development	22.18	22.04
	With 5 Kingdom Street	22.19	22.05
	Change	0.01	0.01
Total PM _{2.5} (µg/m ³)	No Development	14.43	14.34
	With 5 Kingdom Street	14.43	14.35
	Change	0	0.01

The change in NO₂ and PM₁₀ concentrations equates to 0.025% of the UK Objective level of 40µg/m³. When assessing the magnitude of change, the Institute of Air Quality Management and Environmental Protection UK's Land Use Planning Document has been followed. The impact descriptor as per the Table 6.3 reproduced below shows that the magnitude of NO₂ and PM₁₀ at the receptors modelled is Negligible as the change is less than 0.5%.

Table 6.3: Impact descriptors for individual receptors.

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

Explanation

1. AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.
2. The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5%, will be described as Negligible.
3. The Table is only designed to be used with annual mean concentrations.
4. Descriptors for individual receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a 'moderate' adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.
5. When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme' concentration for an increase.
6. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.
7. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.